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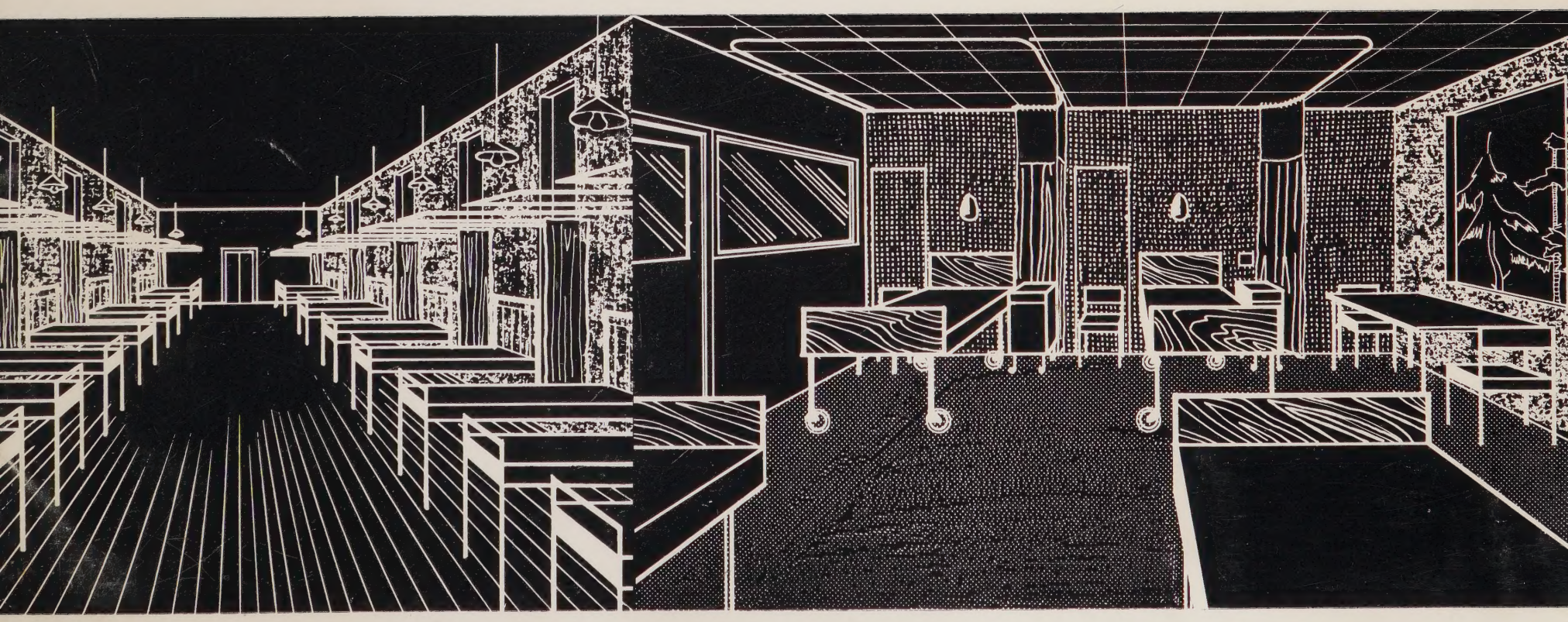
Upgrading of Wards



Scottish Hospital Centre

October 1967

UPGRADING OF WARDS

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UPGRADING OF WARDS

INTRODUCTION

Following the detailed study of ward units which led up to the Scottish Home and Health Department's Hospital Planning Note No. 1, Ward Design, it was suggested that attention should be given to the upgrading or modernisation of many of the existing units, particularly those that would not be replaced within the foreseeable future. Hospital Boards were asked to complete a questionnaire in 1964 to identify the number of ward units that had been upgraded in the previous few years and the number expected still to be in use five years later.

The Scottish Hospital Centre took over the study at the end of 1965 and this report details the findings made by a multi-professional team comprising:

Architect	A. R. H. Bott
Medical Officer	J. L. Graham
Nursing Officer	Miss E. K. McNaught
Work Study Officer	F. Daly
Jas. D. Gibson and Simpson, Quantity Surveyors	P. W. Dixon M. S. Mackinlay

The team gratefully acknowledge the help they had from other members of staff of the Hospital Centre, many officers of the Hospital Service, (particularly to the medical and nursing staff of the ward units that were studied in detail), and to architects and quantity surveyors who made material available for analysis.

The report is arranged in five parts.

Part One comments on the studies which led to this publication and illustrates ten upgraded ward units.

Part Two identifies important principles and makes recommendations.

Part Three examines the application of these recommendations with six representative examples.

Part Four considers the cost implications of ward upgrading and suggests a basis for assessing projects.

Part Five gives figures relating to ward upgrading in Scotland and indicates the size of the problem.

Appendices summarise points made in the text and give a fold-out key to the plans.

Part One: THE STUDY

1 WHY THIS REPORT?

1.1 Most of the old and many of the newer ward units in Scotland do not satisfy the needs of the patients, nurses and doctors who use them. In some instances the facilities are grossly inadequate and out-of-date. Few would contend that a Nightingale ward with its limited and often inconvenient ancillary rooms provides satisfactory accommodation for patients and staff, and few, whether seriously ill or less so, bedfast or ambulant, would choose to be a patient in an open ward.

1.2 The best hope of approaching the ideal is to build anew, basing design on the objective analysis of functional requirements and learning from the experience of others, but all too often the opportunity for a fresh start is denied.

1.3 Because of national economic restrictions many structurally sound but inconvenient ward units will remain in use for years to come. A recent survey undertaken by the Scottish Hospital Centre shows that since 1948 over 900 ward units have been upgraded in Scotland and indicates that nearly 1,000 have never been upgraded and will not be replaced within the next five years. During these five years, at a conservative estimate, two million patients will be treated in these old units. Details of this survey, and an analysis of the returns are given in Part Five: STATISTICS.

1.4 To date, most upgrading schemes have been carried out by the Boards of Management for individual hospitals with limited involvement of Regional Hospital Boards. Much local effort is applied to this work, but although in total it represents considerable expenditure, the experience gained has not been pooled for the lessons to be learned and applied. With the best of intentions money may not always be spent to the greatest effect, and this study was undertaken to produce some planning guidance in a field where relatively modest expenditure can benefit large numbers of people.

2 WHAT IS UPGRADING?

2.1 It is difficult to give an exact definition of upgrading but clearly the object is to secure an improvement in facilities for both patients and staff. The word " upgrading " has been used to describe work ranging from the almost total demolition and rebuilding of a ward to the provision of individual curtain rails round beds or the replacement of a w.c. or washhand basin. A criterion used provisionally by the Scottish Home and Health Department was the minimum expenditure of £50 per bed, but this in itself is unreliable. It is not difficult to spend this sum on maintenance and redecoration work, in some cases without necessarily achieving any functional improvement other than to the patients' environment. Many of the wards classed as non-upgraded in Part Five (Table 1) have in fact been extensively redecorated. This report is concerned with upgrading in the sense of functional improvement and distinguishes between this and repair and maintenance work.

3 WHAT ARE THE BASIC REQUIREMENTS OF A WARD?

3.1 Before considering upgrading as such it is necessary to identify the functional requirements of a ward. It must be stressed that the *basic* requirements are the same for any ward unit irrespective of the speciality. Although this report is written with particular reference to the acute general hospital situation, the basic requirements are common to any inpatient accommodation and the analysis and recommendations which follow can be applied in units such as geriatric hospitals, cottage hospitals, and acute psychiatric hospitals, and perhaps to units outwith the hospital service such as nursing homes.

3.2 The requirements of a ward are of course those of the people using it, and the three main users of ward units are patients, nurses and doctors. There are many others who use the accommodation, such as domestic and catering staff, medical social workers, physiotherapists, visitors and others, but it is confidently suggested that by and large their needs will be met by a design which satisfies the requirements of the three main users. Throughout this report there will be references to these basic requirements which are stated here, analysed in Part Two, and listed in Appendix 1.

3.3 Patients' Requirements

3.3.1 An environment which will provide an acceptable level of comfort, privacy and amenity.
3.3.2 Facilities for their human needs.
3.3.3 Facilities for the diagnosis and treatment of their condition.
3.3.4 The reassurance of visual contact with nursing and medical staff, and an efficient nurse call system.

3.4 Nurses' Requirements

3.4.1 Observation of patients, commensurate with their condition.
3.4.2 Facilities for the giving and receiving of reports and instructions and maintaining records.
3.4.3 Storage for items of equipment. Facilities for the preparation and carrying out of nursing activities and for the disposal of items used in patient care.
3.4.4 Cloakroom facilities.

3.5 Doctors' Requirements

3.5.1 An environment which will provide for history-taking, examination, diagnosis and treatment of patients.
3.5.2 The right equipment in the right place at the right time.
3.5.3 Writing and discussion facilities and access to patients' records.

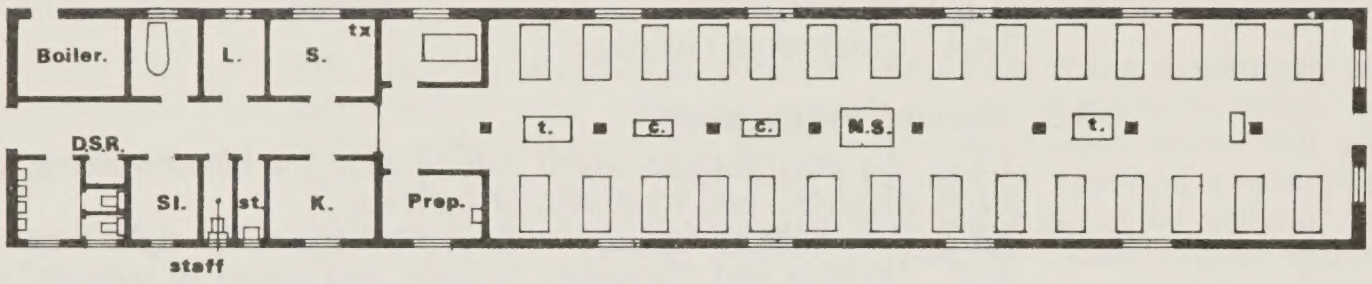
4 REVIEW OF TEN EXISTING UPGRADED WARDS

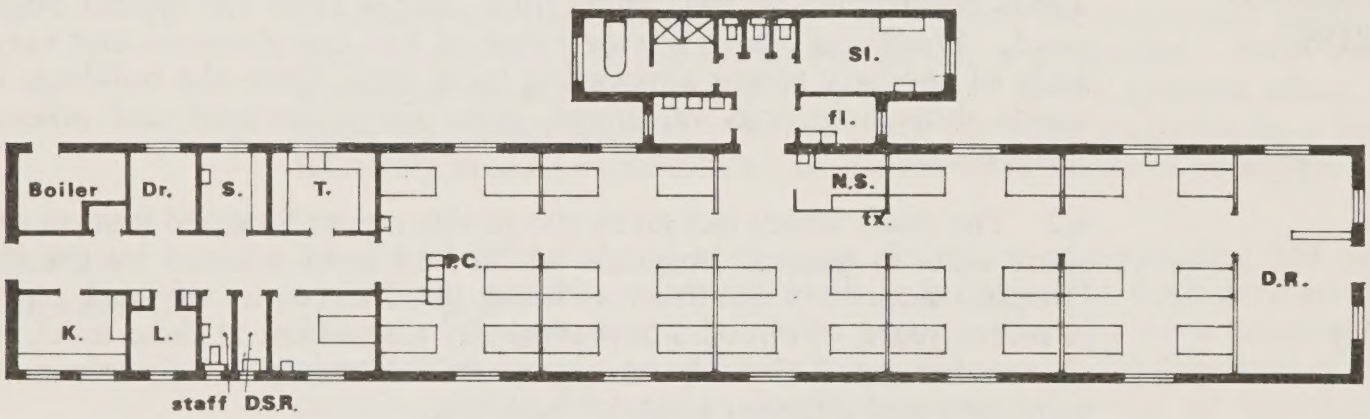
4.1 Our hospitals contain ward units which are influenced by the thinking of Florence Nightingale with some variations in infectious diseases hospitals and other purpose planned units. Even the Emergency Medical Services wards constructed in 1941 show little change from the typical Nightingale ward. Ward units have a wide range of bed complements and vary in the scale of ancillary rooms supporting these beds, while the buildings housing wards show numerous variations, some single storeyed and others multi-storeyed.

4.2 The study which has given rise to this report focussed first on upgraded ward units in general hospitals which had been selected by the Regional Hospital Boards in Scotland as being good examples of work carried out in recent years. Following a preliminary assessment at these units, ten were chosen for detailed study as representative examples of various types of ward unit and different kinds of building.

4.3 The design of a ward unit and the room relationships within it directly and continuously affect the work of the nurses, and the observation of their work is an effective way of reaching an objective functional assessment of the unit. Continuous observations of the nurses' work in these ten ward units were carried out by the study team over the peak periods of the day and night. These observations have produced the following comments, many of which apply to several different upgradings and are not necessarily repeated every time. The comments supplement the plans and draw attention to important points and principles. For each example there are two plans, before upgrading at the top of the page and after upgrading underneath, and in each case the entrance to the ward units is from the left side of the page. Bed curtains are provided in all multi-bed rooms but are not shown on the plans. A fold-out key to the plans is given in Appendix 4 (last page of the report).

4.4 As explained above, the comments on the upgrading are given as they affect the three main users—the patient, the nurse and the doctor—and are given in the order of their requirements as listed in Appendix 1. A synthesis of these comments is made in the analysis in Part Two paragraph 5.





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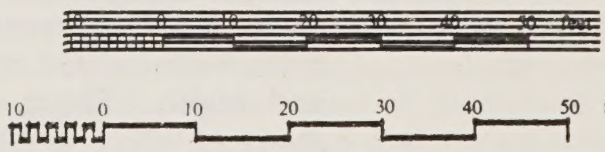


Ward 1
Single storey brick E.M.S. ward—30 beds before upgrading, 28 beds after.

Patient

1 The cubiclisation of the bed areas and the provision of a day/dining room has improved the level of privacy and amenity, but the improvement is limited by the fact that the beds are in bays, not rooms, and the partitions are not full height to the ceiling. In addition, the upper half is clear glazed resulting in patients being overlooked from adjacent compartments and being disturbed by lights from them. Noise transmission is considerable between bays and from the day room because it has no door. In this ward the arrangement of beds parallel to the window walls results in unduly close bed spacing and beds next to the corridor are particularly exposed to casual disturbance. In a 28-bed ward unit more than one single room is required.

2 Sanitary facilities have been increased and located in an extension centrally related to the bed areas. The w.c. compartments (with no hand rinse basins) have wide outward opening doors which admit sani-chairs, but the washhand basins are grouped without privacy. One shower with separate space for drying and dressing would be more effective than two without. A stack of small lockers at one end of the main bed area is provided for patients' clothes.

3 The room labelled " Treatment " is used as a preparation room; treatments are carried out at the bed.

4 All beds except one are in open bays giving frequent visual contact with nursing and medical staff. Each patient has a nurse call button.

Nurse

1 Ill patients are grouped nearest to the nurses' station but this exposes them to the disturbance of traffic to other bed areas in the ward.

2 Although the nurses' station is in the centre of the bed areas, records are kept in the sister's office thus generating much traffic between the two.

3 Preparation and storage facilities are split between the nurses' station, " Treatment " room and linen room. In practice, a trolley is loaded with items required for patient treatments and parked at the nurses' station as a temporary clean supply centre. The trolley for individual treatments was set from this supply trolley. The kitchen remains in its original location which meets its dishwashing function but is inconvenient for beverage service to patients. The disposal function is accommodated in the sluice and in the adjacent flower room in which jugs and patients' wash bowls are kept.

4 There is a staff w.c. and cloakroom.

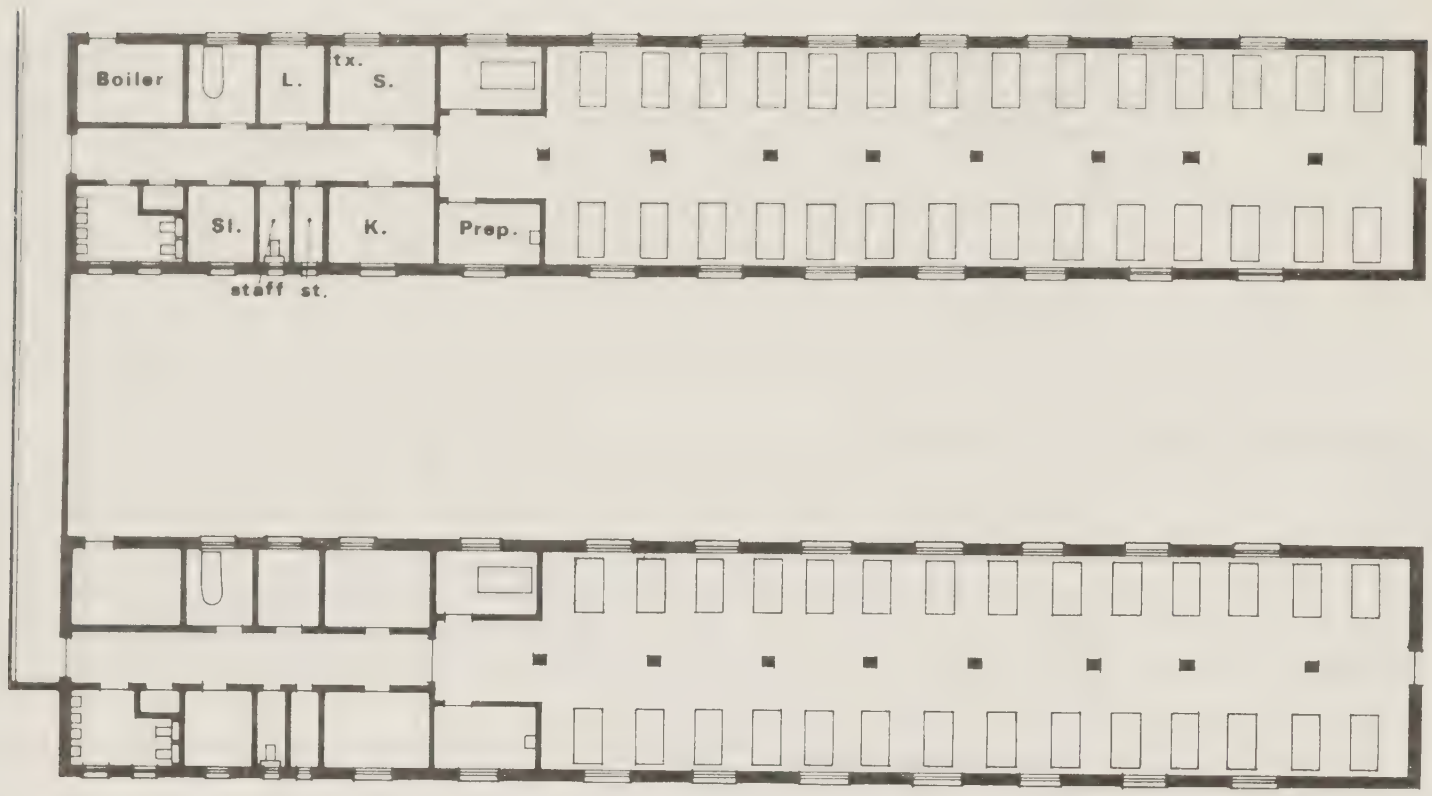
Doctor

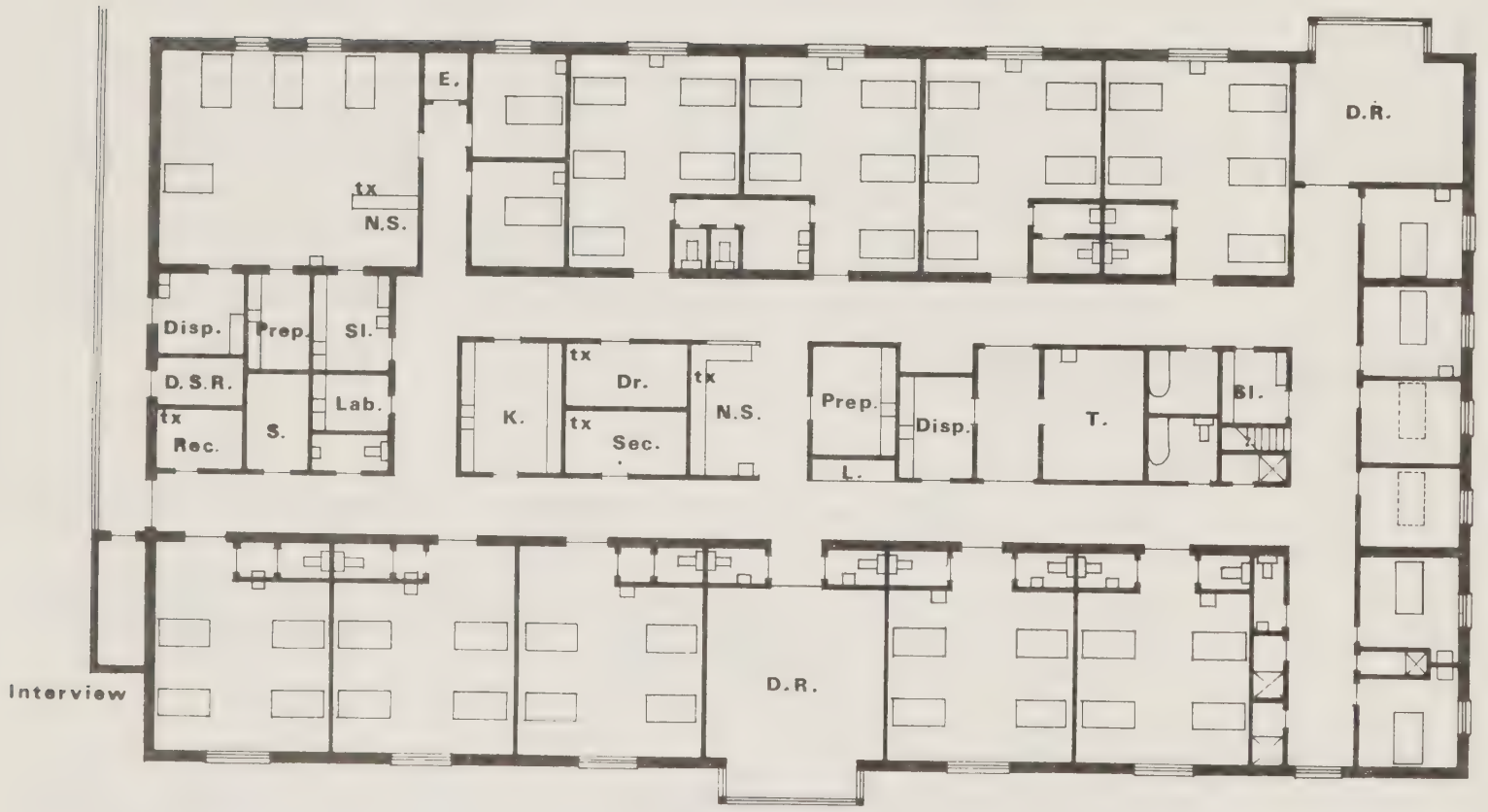
1 The bed spacings are somewhat limited. The curtains give visual but not auditory privacy for the doctor and patient.

2 Facilities for writing records are provided at the nurses' station, the sister's office and the doctor's office but these are widely separated and records are kept in the sister's office.

Additional Comment

This ward has many improvements but it would be functionally more effective if the nurse working rooms rather than the sanitary facilities were grouped and located in the extension behind the nurses' station.





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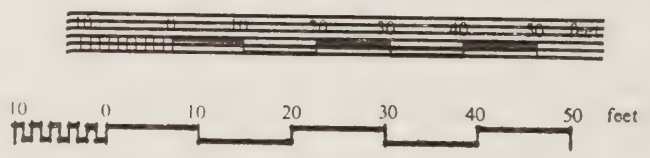


Ward 2

A pair of single storey brick E.M.S. wards—60 beds before upgrading, 52 beds after.

This ward was planned for experimental engineering ventilation tests. Variations in the detailed planning of sanitary and other accommodation were incorporated expressly for experimental purposes.

Patient

1 The division of patient areas into single and multi-bed rooms and attention to the finishes and services have created a much improved environment for patients. Separate day rooms accommodate noisy activities and provide dining space for ambulant patients. Acoustic ceilings in corridors and day rooms help to minimise noise transmission.

2 Sanitary facilities are conveniently located. Multi-bed rooms all have direct access to w.c.s and washhand basins; in some cases these are shared with another multi-bed room to provide varied ventilation test conditions. Washhand basins are not enclosed; w.c. compartment doors are inward opening and too narrow for sani-chairs. Four shower cubicles and two bathrooms meet patients' needs. Every bedroom has a staff washhand basin. Built-in clothes lockers are grouped next to the door of each multi-bed room.

3 There is an intensive care area and rooms are provided for interviews and for treatment.

4 There is insufficient visual contact with the staff, limited to a glazed panel in the door of each room. A nurse call system is provided.

Nurse

1 Observation of the ill patients from all points in the intensive care area is excellent at the expense of some loss of privacy. In the remainder of the ward it is necessary to enter each bedroom to see the patients within. Because of limited observation into the bedrooms, night nurses sit inside rooms with the doors open which are thus rendered ineffective for noise reduction.

2 The central nurses' station provides good facilities for its functions.

3 The preparation and storage facilities are inconveniently divided between the nurses' station, preparation room and a separate linen store. The ward kitchen, accommodating the noisy dishwashing function, is a disturbance located unfortunately near the intensive care area. The disposal room opens off the treatment room air lock and a corridor; the study showed that this is inconvenient for the many journeys between this room and the preparation room. One sluice is at the end of the central core and there is access to the intensive care sluice from the corridor. The intensive care area is also well served by its own preparation and disposal rooms.

4 There are separate male and female staff cloakrooms and w.c.s.

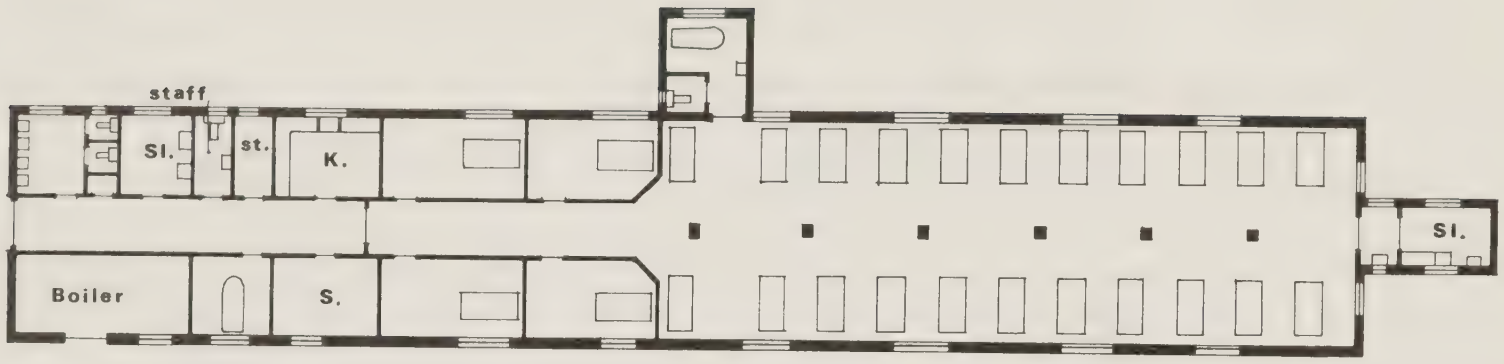
Doctor

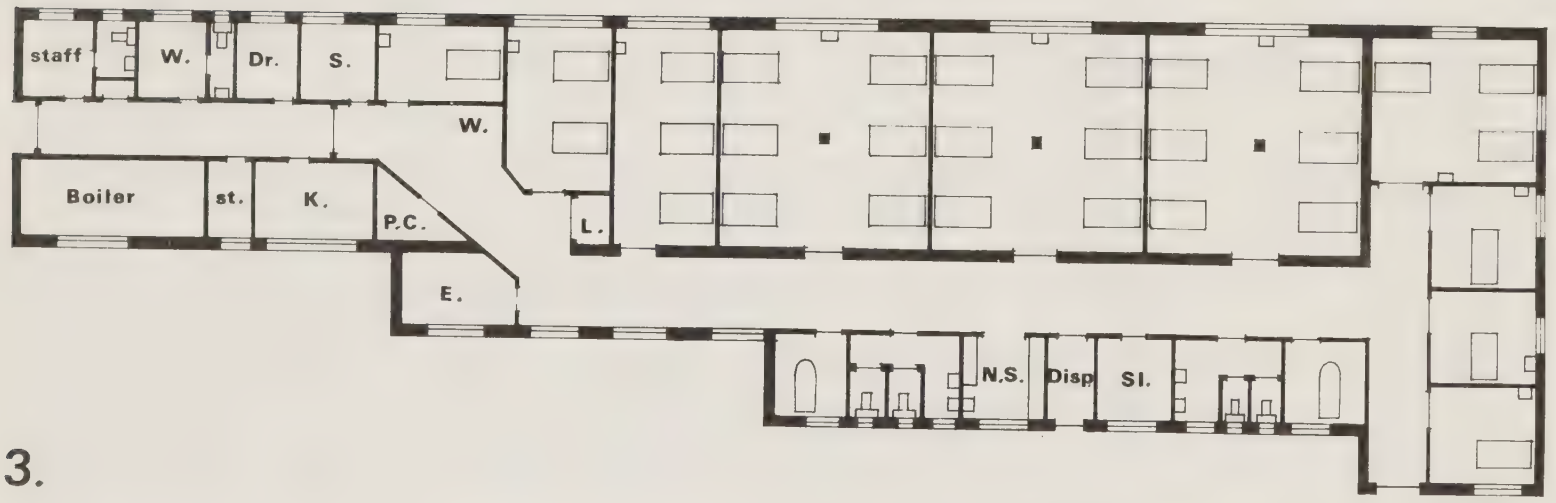
1 The provision of single, four-bed and five-bed rooms together with the treatment and interview rooms goes a long way towards meeting the doctors' requirements. The intensive care unit offers additional advantages.

2 A doctors' room adjoins the nurses' station.

Additional Comment

This extensive upgrading incorporates the concept of a large ward unit in which a self-supporting intensive care unit serves more than one nurse charge. It is worth noting that this unit was upgraded on the basis of the recommendations in Planning Note No. 1 " Ward Design."





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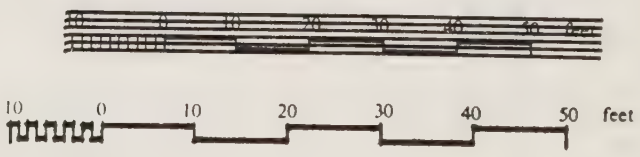


Ward 3
Single storey brick E.M.S. ward—26 beds before upgrading, 30 beds after.

Patient

1 This upgrading has put all beds into enclosed rooms with consequent advantages in privacy and amenity which would only be bettered by reducing the 6-bed rooms to 4-bed rooms. There is space for sitting in the 6-bed rooms but no separate day room. (A television set in the corner 3-bed room attracts ambulant patients from other rooms.)

2 Sanitary facilities are provided centrally in two groups. No privacy is offered at washhand basins. A cupboard off the corridor provides storage for patients' clothes.

3 Treatments are carried out at the bed.

4 Visual contact with staff is restricted; glazing is limited to the door of each room. A nurse call system is provided.

Nurse

1 Nurses have to enter each bedroom to observe patients. Ill patients are grouped in the 6-bed room opposite the nurses' station.

2 The nurses' station is a base for reporting and record keeping, but the sister's room is also used for reporting.

3 The disposal and sluice rooms are well located in a central position but supply and preparation facilities are widely dispersed between the nurses' station, linen and other stores.

4 The staff cloakroom is next to the ward entrance.

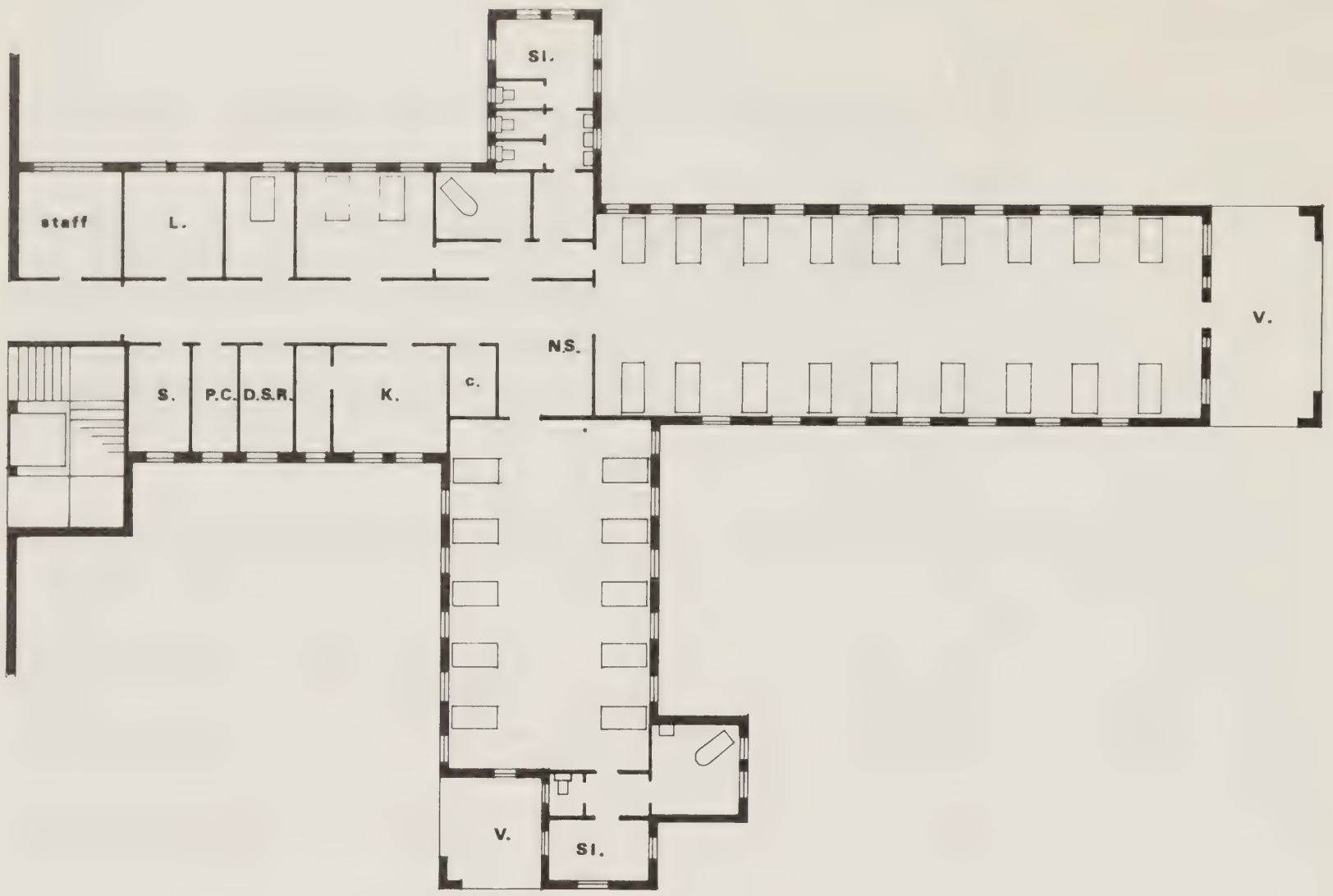
Doctor

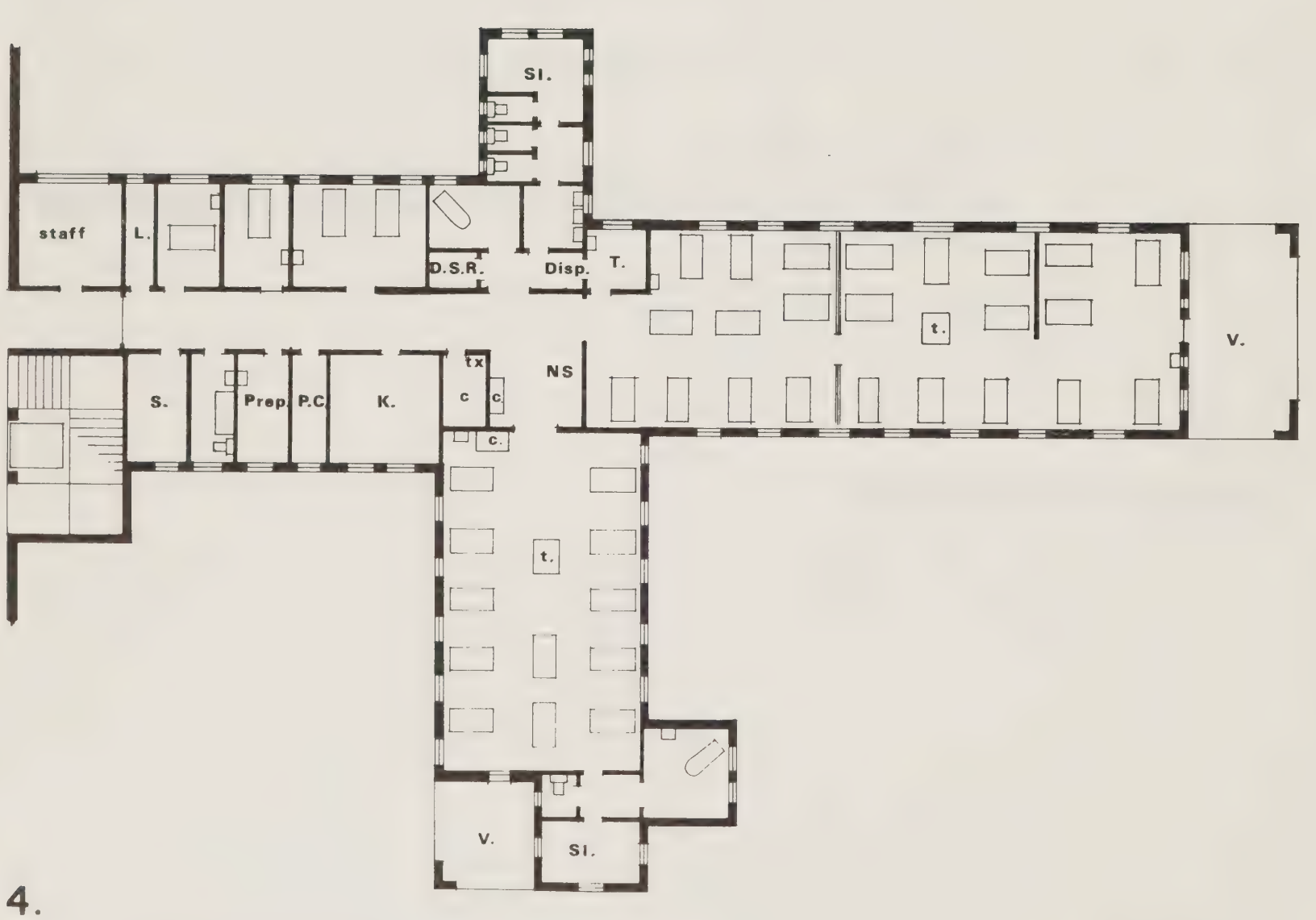
1 There is no treatment room, but the bedrooms offer reasonable privacy for the doctor within the limitations of multi-bed rooms. There are four single rooms.

2 There is a doctors' office next to the sister's office.

Additional Comment

The bends in the corridor present some communication and observation difficulties. Brick piers in the centre of the 6-bed rooms cause surprisingly little inconvenience.





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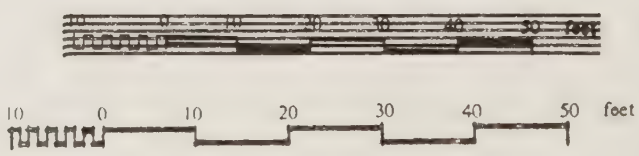


Ward 4

Multi-storey stone building—31 beds before upgrading, 35 beds after.

Patient

1 The small amount of partitioning in the larger bed area does little to improve the patients' environment. Bed spacing is inadequate and there is no day room to give relief from the crowded bed areas.
2 Sanitary facilities are inconveniently sited with inadequate privacy. A cupboard provides central storage for patients' clothes.
3 A small treatment room opens off the large ward, but will not admit beds.
4 Visual and auditory contact with staff is almost unrestricted. A nurse call system is provided.

Nurse

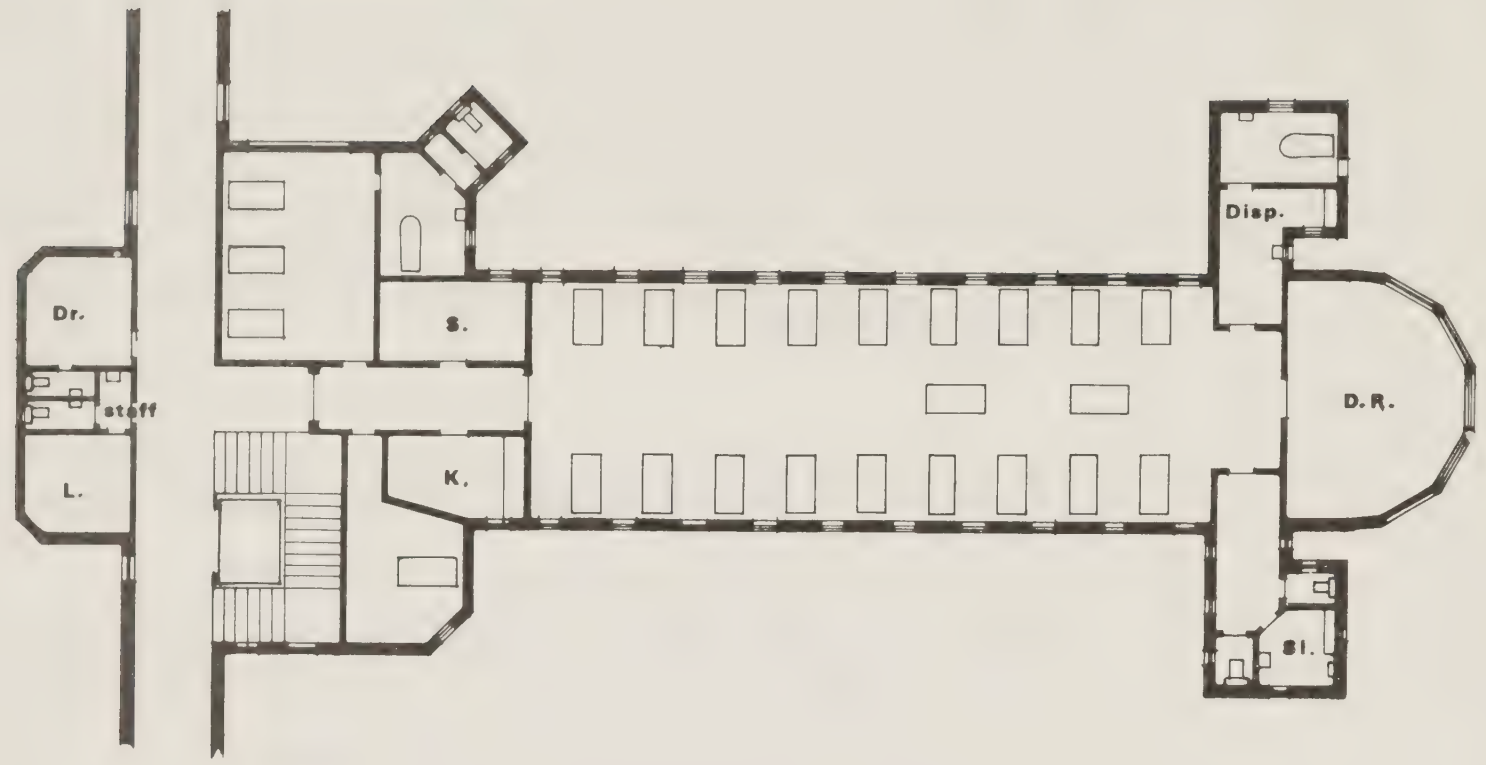
1 The ill patients are grouped near to the nurses' station. However, in this position they are seriously exposed to the disturbance of concentrated ward traffic.
2 The nurses' station is the centre for records and reporting.
3 Preparation and supply facilities are widely scattered. A disposal bag is placed at the end of the passage to one of the sluices which house all other disposal functions.
4 A staff cloakroom outside the ward entrance is shared with other wards.

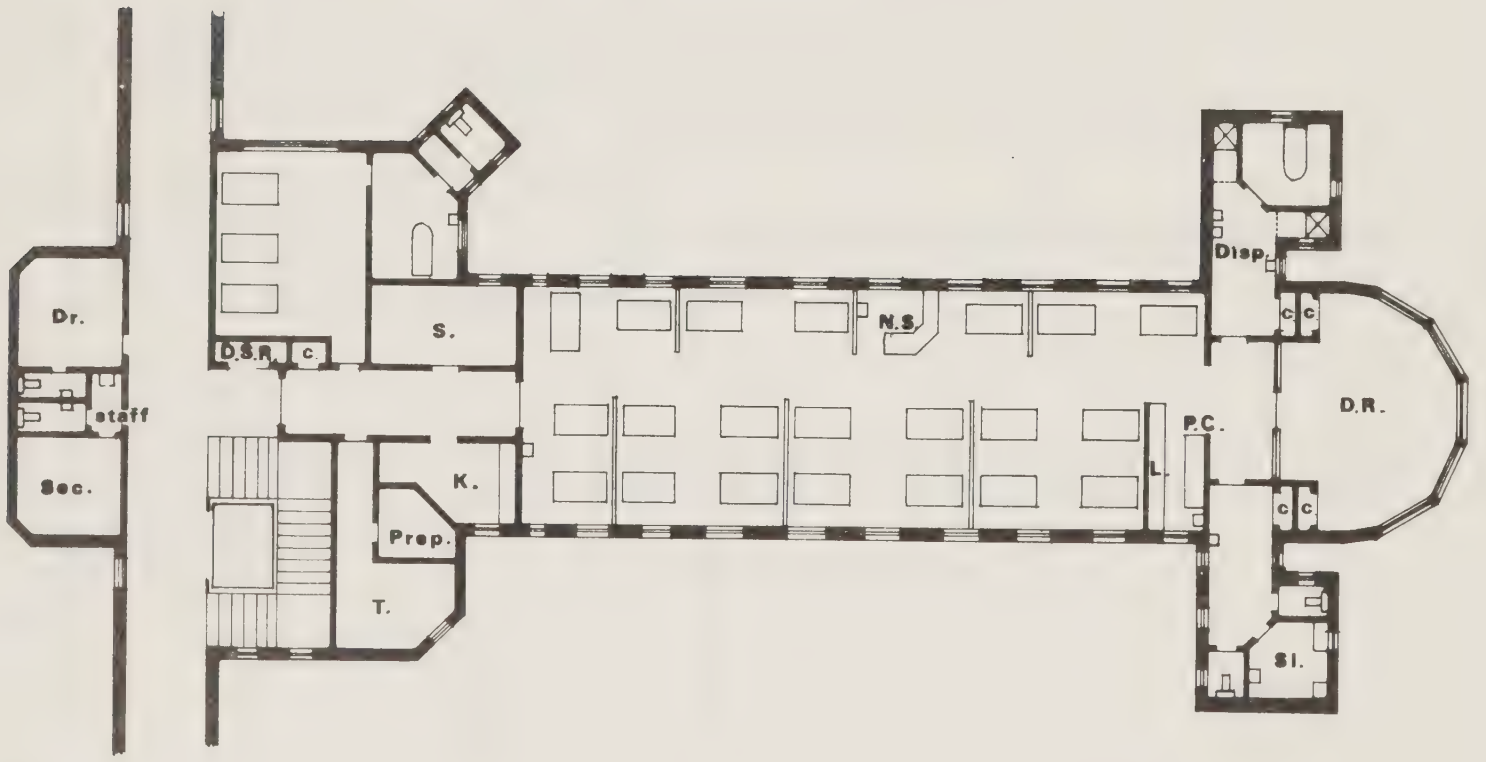
Doctor

1 The treatment room can be used only for ambulant patients. The doctor shares the nurses' station for writing notes etc.

Additional Comment

Two largely open bed areas used by both sexes and different specialties render the unit somewhat inflexible in use. The acceptance of additional patients in the centre of each large bed area at the time of the study placed an unfair strain on an already crowded unit.





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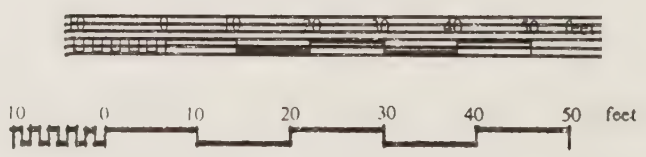


Ward 5

Multi-storey stone building—26 beds before upgrading, 24 beds after.

Patient

1 Partitions 7′ 0″ high give some improvement in visual privacy but do little to reduce noise transmission. There is a day room at the end of the ward.

2 Two showers have been added to the sanitary facilities. W.C. compartments do not admit wheelchairs and washhand basins offer no privacy. Cupboards are available for patients' clothes at one end of the ward.

3 A treatment room is provided but is inaccessible for beds.

4 Visual contact with staff is easy except in the 3-bed side room.

Nurse

1 Ill patients are grouped near the nurses' station where they are remote from other facilities.

2 Reports are given in or outside the sister's room. The patients' records trolley stands at the entrance of the main bed area, but the nursing records are kept at the nurses' station.

3 Preparation and disposal areas are dispersed at either end of the ward unit. Dangerous drugs are kept at the nurses' station away from the other equipment required for their administration.

4 The nurses' cloakroom is provided across the main hospital corridor.

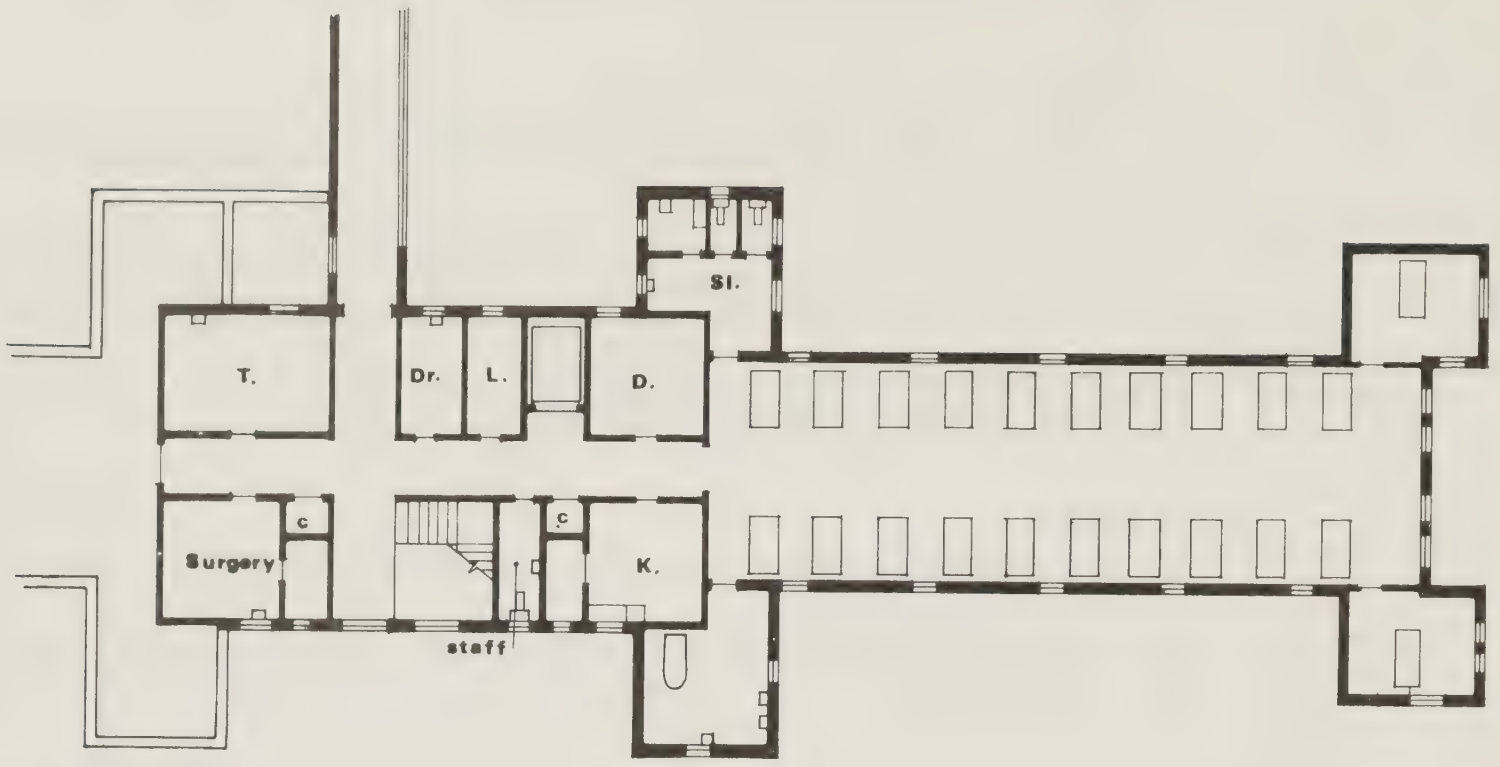
Doctor

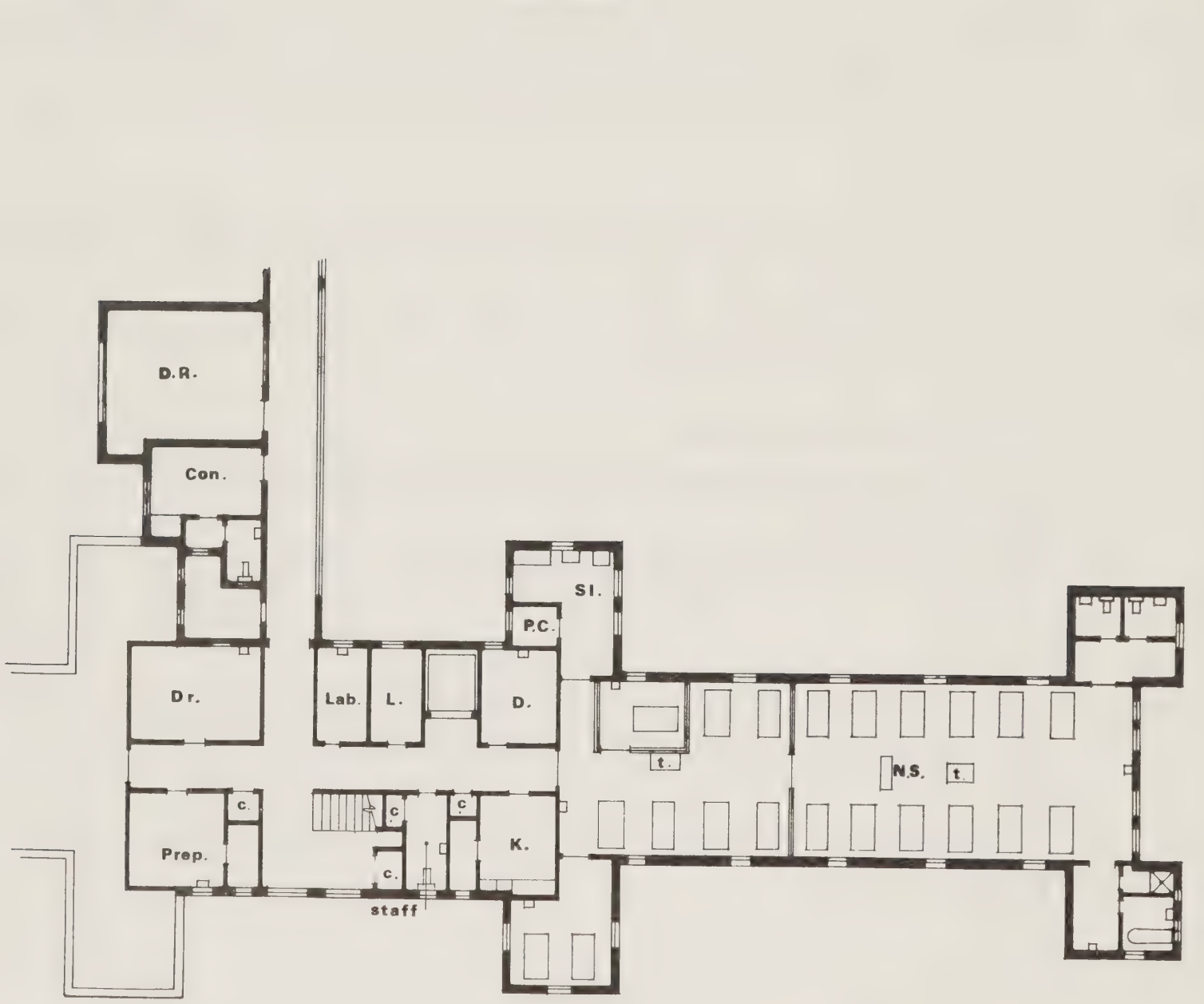
1 History taking and most treatments take place at the bed without auditory privacy. The treatment room would be more useful if it could admit beds.

2 A consultant's office is provided across the corridor; the house officer shares sister's office.

Additional Comment

A suspended heated ceiling improves the proportions of what was a very high ward.





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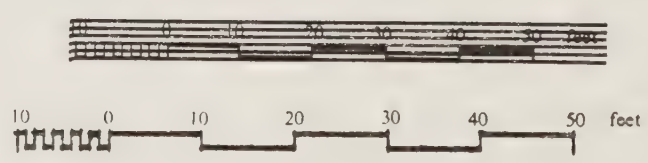


Ward 6

Multi-storey stone building—22 beds before upgrading, 20 beds after. This ward is one of a pair sharing ancillary accommodation.

Patient

1 A glazed partition halfway along the ward achieves little improvement in privacy. There are two single rooms although at the time of the study there were two beds in one of them.

2 The sanitary facilities are more conveniently located at the far end of the ward than in their original position, but space and privacy are restricted. There is a central cupboard for patients' clothes.

3 Treatments are carried out at the bedside. Use is also made of an examination couch in the room labelled " Lab."

4 Visual contact with staff is almost unimpeded.

Nurse

1 Most of the beds except those in the side rooms can be observed from the nurses' station.

2 Reporting and record keeping takes place in the duty room. The nurses' station functions purely as a night desk.

3 Preparation and disposal facilities are dispersed and shared with its twin ward.

4 A staff cloakroom serves both wards.

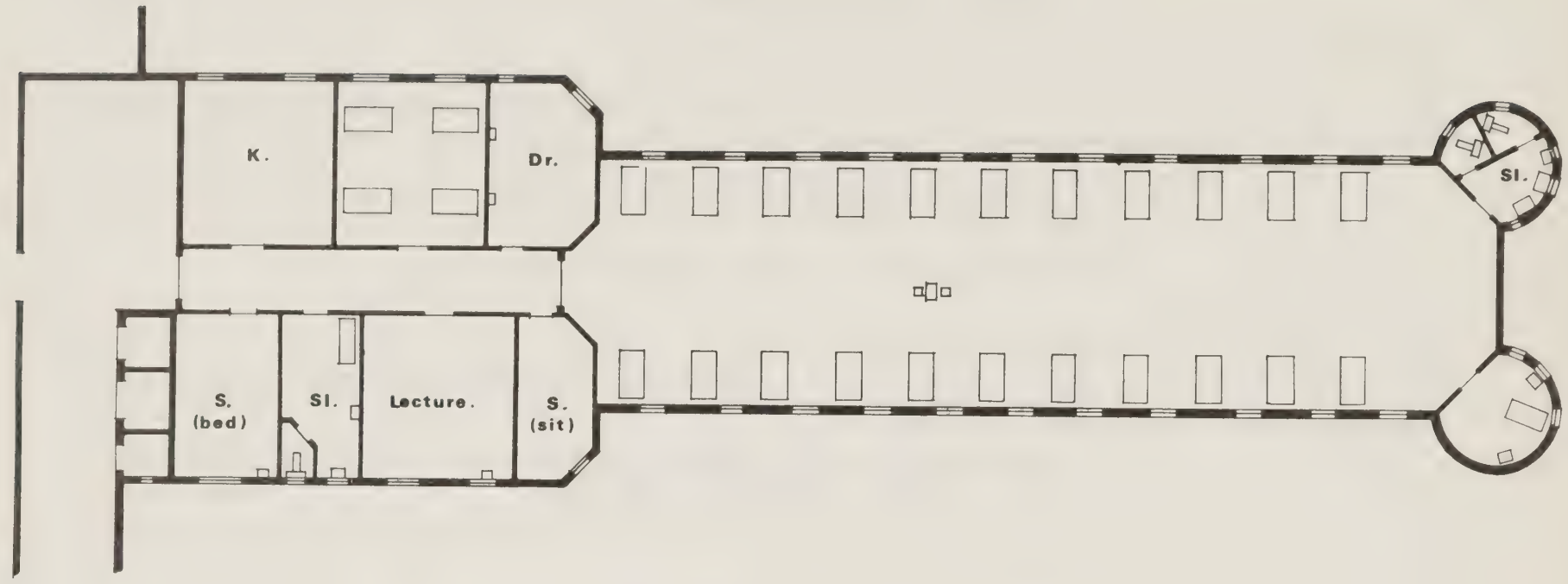
Doctor

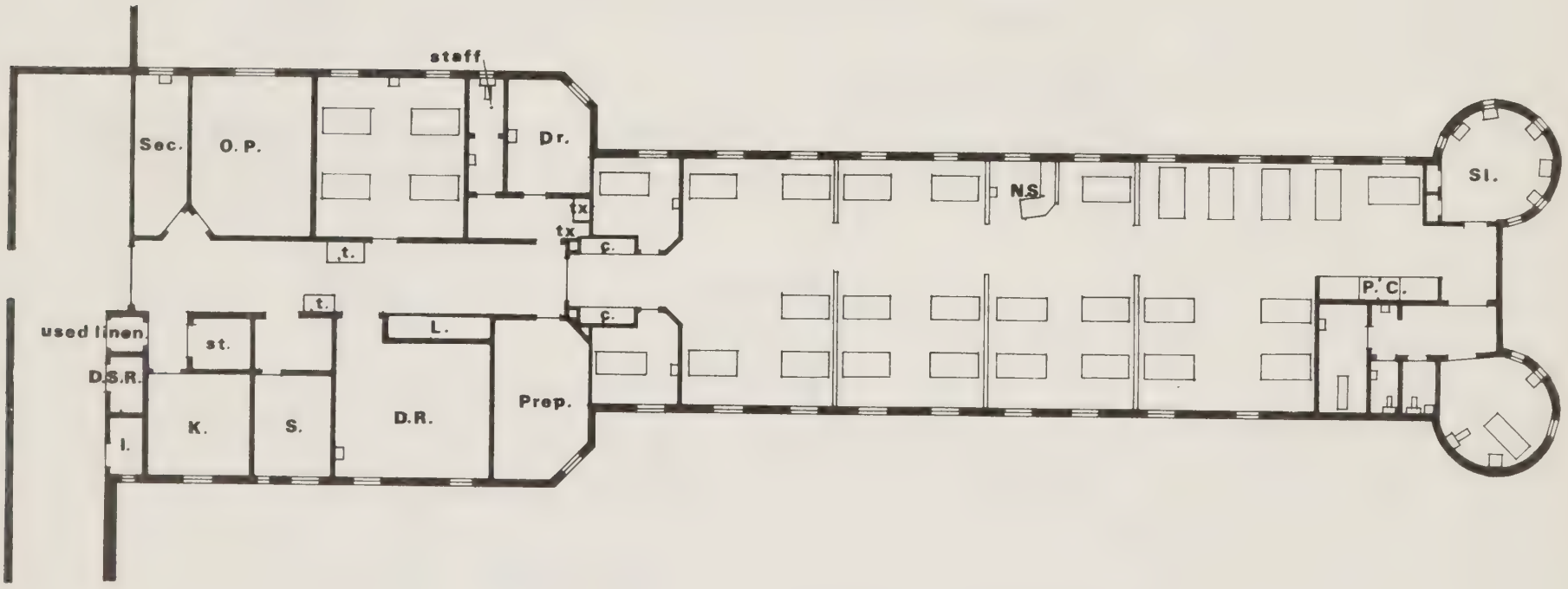
1 The only auditory privacy for history taking etc. is in the single rooms and in the room labelled " Lab " which contains an examination couch.

2 A doctors' office serves both wards and contains two desks.

Additional Comment

This plan demonstrates the inconvenience of two ward units sharing ancillary rooms. A room convenient for one ward is necessarily remote from the other.





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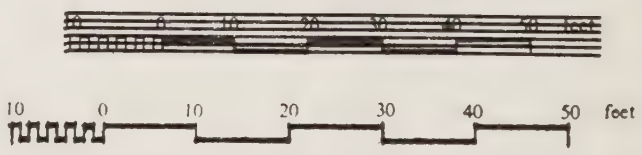


Ward 7

Multi-storey stone building—26 beds before upgrading, 30 beds after.

Patient

1 Cubiclised bays with 7′ 0″ high partitions, half glazed with obscured glass give patients some visual privacy. Bed spacing is adequate, apart from an extra bed which was in the ward at the time of the survey. There are two single-bed rooms at the entrance end of the original open ward. Noise transmission up and down the ward reaches a disturbing level, a contributory factor being the activity by ambulant patients in the bed areas because the dayroom is reserved during the morning for teaching purposes.

2 The sanitary facilities are grouped at one end of the ward and are both an increase and an improvement over the original provision. Three cupboards are available for patients' clothes.

3 All treatment is carried out at the beds.

4 Open bays permit easy visual contact with staff. A nurse call system is provided.

Nurse

1 The four-bed room is used for the least ill patients. The remoteness of the single rooms from the nurses' station limits the observation of the acutely ill patients who are nursed in them.

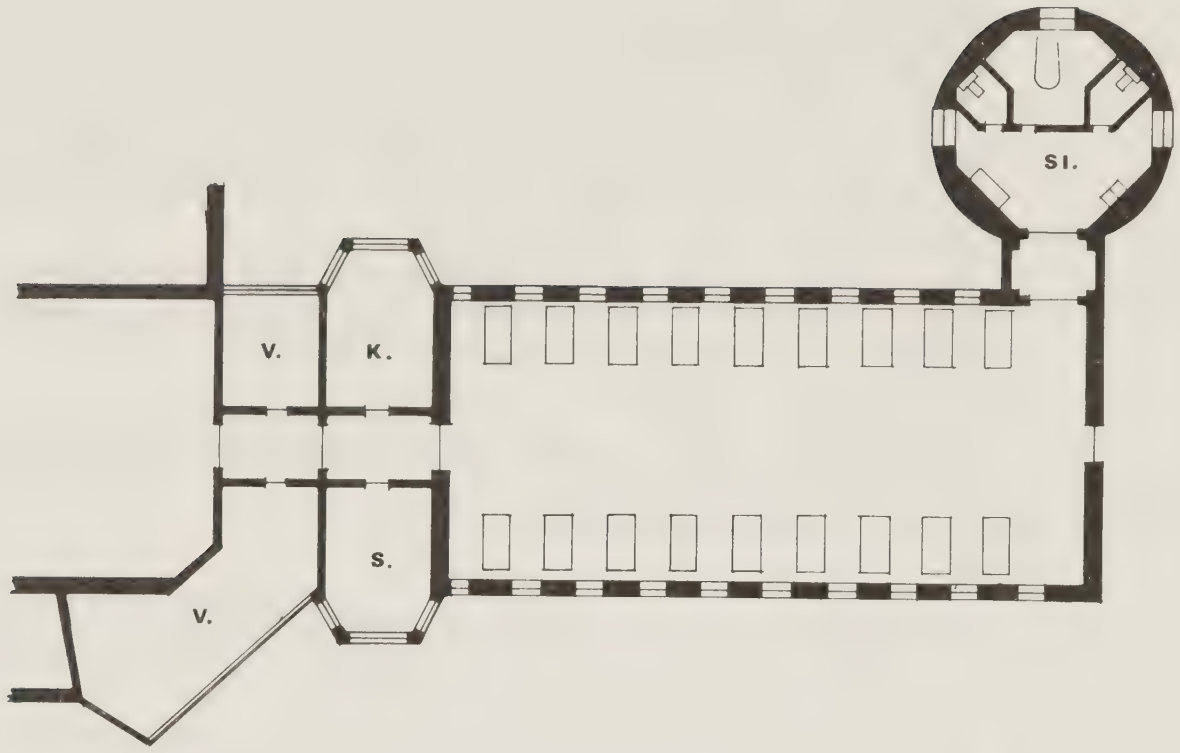
2 The nurses' station permits observation of some of the beds and is adequate for record keeping purposes.

3 Storage for items required for nursing procedures is widely dispersed throughout the unit. Staff washhand basins are provided at the nurses' station and in the single and four-bed rooms. The sluice acts as a temporary disposal point from which items are taken to the incinerator or to the used linen basket which are both on the main hospital corridor.

4 There is a nurses' cloakroom and w.c.

Doctor

1 The open bays do not provide auditory privacy for history taking or examination although the room labelled "out-patients" might be useable for this purpose.



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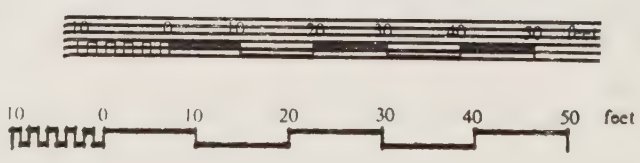


Ward 8

Multi-storey stone building—18 beds before upgrading, 19 beds after.
At the time of the study work had not been completed on alterations to some of the rooms flanking the entrance to the ward unit and these were not in use.

Patient

1 Apart from the single room, the division of patient areas into bays with 7′ 0″ high partitions gives some visual privacy but has negligible effect on noise transmission. Bed spacing is tighter than before the upgrading. The day room bay falls short of the level of amenity which is offered by a room with a door. (The underused sister's room might be more satisfactory as a dayroom.)

2 There is little real improvement in the sanitary facilities and access via the sluice is undesirable. There is a cupboard for patients' clothes at one end of the ward.

3 Treatment takes place at the bed.

4 The open bays permit visual contact with staff.

Nurse

1 The nurses' station is well sited next to the beds used for the ill patients.

2 In very limited space the nurses' station forms an effective base for preparation and storage of equipment and the maintenance of records.

3 Used linen is collected in the sluice; other material for disposal is put in bins outside the ward entrance off the hospital corridor.

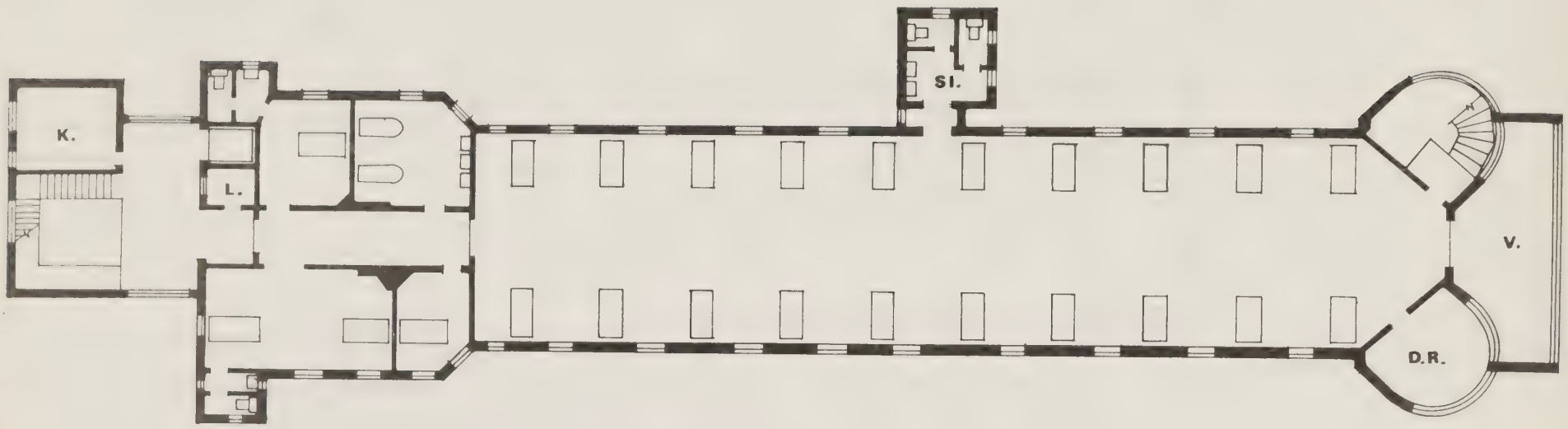
4 Three wards share a nurses' cloakroom.

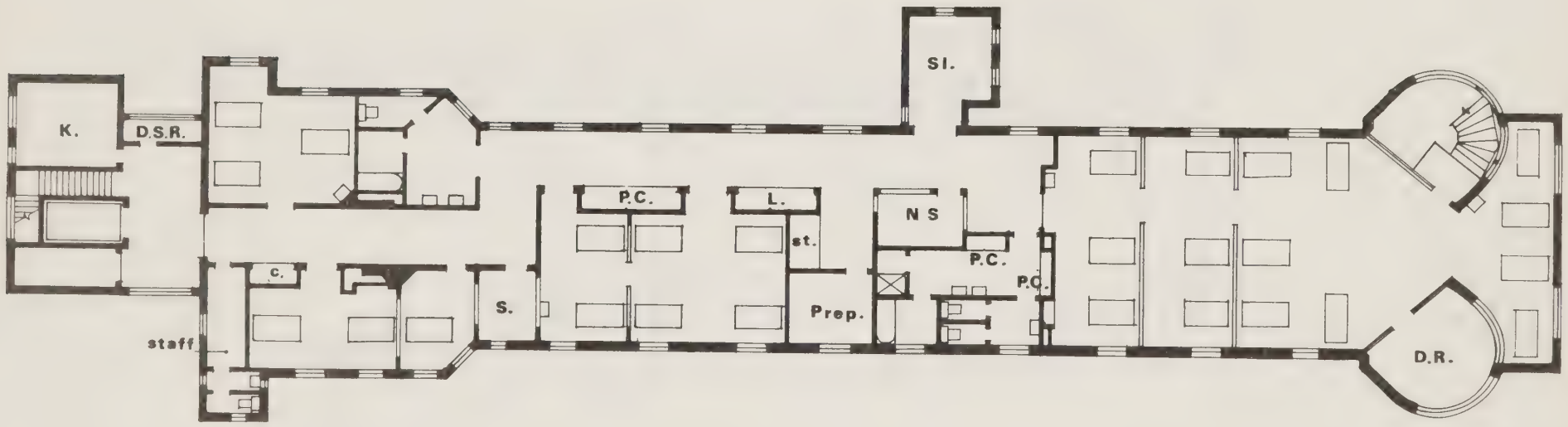
Doctor

1 Apart from the single room, the upgrading offers little improvement in facilities for the doctor.

Additional Comment

This is a small ward with very limited space for ancillary accommodation but a good practical compromise is achieved by combining the nurses' station, preparation and storage area in one bay.





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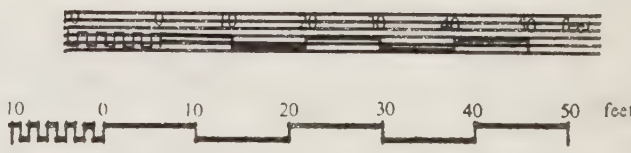

Ward 9

Multi-storey stone building—28 beds before upgrading, 27 beds after.

Patient

1 Beds are either in enclosed rooms (single, double, three- and four-bed) or open bays (three-, four- and five-bed); the enclosed rooms offer the better environment for patients. It may be noted that traffic through the communicating opening between the four-bed and two-bed areas near the centre of the unit causes unnecessary disturbance to patients; since each area has a door to the corridor they would have been better completely divided. The day room is well located near the ambulant patients.

2 The two groups of sanitary facilities are well-appointed but there is no privacy at the washhand basins and there are no handrinse basins in the w.c. compartments. Clothing lockers are provided centrally in the ward unit.

3 Treatment takes place at the bed.

4 The enclosed rooms (which accommodate the ill patients) seriously limit visual contact with staff because corridor partitions are not glazed. There is a nurse call system.

Nurse

1 Ill patients are grouped in the enclosed rooms at the entrance end of the ward and are therefore remote from the nurses' station. Observation from the corridor is limited to a glazed panel in the doors. There are windows between the sister's room and some of the bedrooms but the sister's room is not used because it is remote from the nurses' station and ancillary rooms, so the window curtains are kept closed.

2 Although the nurses' station is a glazed room no beds can be seen from it. It is used as a base for giving and receiving instructions and writing reports by doctors, sister and nurses.

3 The preparation room and sluice are near the nurses' station. Preparation and storage are dispersed between these and the adjacent linen store. The kitchen is remote from the other facilities, being across a lobby from the ward. There are disposal points in the sluice, the domestic service room and lift lobby.

4 The nurses' cloakroom provides satisfactory facilities in a suitable location.

Doctor

1 Apart from one single room there is limited privacy for history taking, examination and treatment. There is no treatment room.

2 There is no doctors' office; doctors use the nurses' station.

Additional Comment

The double bent corridor is noticeably inconvenient for communication and observation. The relationship between the ill patients in the enclosed rooms near the entrance and the nurses' station and associated rooms is particularly compromised.

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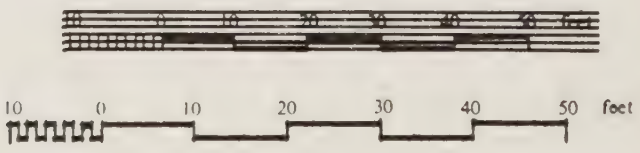


Ward 10

Single-storey brick building over storage basement—24 beds before upgrading, 24 beds after.

Patient

1 Partitions 7′ 0″ high without glazing give some visual but not auditory privacy in the bays in the large ward. There are two single bays as well as the original two single rooms. There is a day room at the ambulant end of the ward.

2 There are sanitary facilities at each end of the ward. Cubicles admit sani-chairs and have outward opening doors. Washhand basins are in enclosed cubicles. Each patient has a wardrobe within his curtained bed area.

3 Diagnosis and treatment take place at the bed.

4 Visual contact with staff is reasonable in the large ward and a glazed 2-bed room opposite the nurses' station, but limited in the other bedrooms to a glazed panel in the door. The nurse call system covers all patient areas including the sanitary facilities and the dayroom.

Nurse

1 Ill patients are grouped near the nurse working areas but with variable ease of observation.

2 The giving and receiving of reports and maintaining of records is divided between the nurses' station and the sister's office.

3 The preparation and disposal facilities are grouped centrally in adjacent rooms.

4 A nurses' cloakroom is placed next to the entrance to the ward.

Doctor

1 There is auditory privacy for history taking etc. only in the two single rooms. Treatments are carried out at the bed.

2 There is a small laboratory-cum-office near the nurses' station; it is proving acceptable to the doctors for the laboratory function but not for office/interview purposes for which they use the sister's office.

Additional Comments

There is no treatment room and no doctors' office in this upgrading, and it is arguable that where space is limited it should be allocated for purposes more directly connected with the work of the ward than, for example, a secretary's office.

The arrangement of bays with bedheads against the external wall maintains adequate bed centres without unduly exposing any patients to disturbance by ward traffic.

It may be noted that this upgrading was based on the recommendations contained in Planning Note No. 1 " Ward Design."

Part Two: ANALYSIS AND CONCLUSIONS

5 ANALYSIS OF THE STUDY

5.1 The upgrading of each of the ten wards illustrated in the previous section poses various kinds of problems. The amount of money available is a major factor in deciding what can be done in each case. Excluding Ward 2, where experimental features confuse the costing, the cost of these schemes ranges from approximately £300 to over £900 per bed (adjusted to 1966 rates). The type of building varies from the single storey temporary E.M.S. ward to the multi-storey infirmary type; the first is relatively easy to extend, the second is not. Apart from building difficulties, the extension of a multi-storey ward block may require the simultaneous evacuation of too many wards. The size of the individual ward unit ranges from 18 beds to 31. There is no correlation between either the bed complement or the total area of the ward units and the ratio of ancillary rooms to bed areas. The clear width of an open ward is a critical factor in determining the layout of beds in a possible upgrading, and these wards show significant variations in width. Many other influences on the design of these upgrading schemes might be mentioned including the individual preferences and requirements of each hospital, and the continuation of traditional practices which may no longer be relevant, but it has been possible to extract from a study of these and other wards certain common threads of comment.

5.2 The presentation of these comments follows the pattern used earlier in this report and they are arranged under the headings of the three main users, the patient, nurse, and doctor. Emphasis is laid on the main factors to be considered while the more practical points of detail are set in italics. (A summary of the main points is contained in Appendix 2.)

5.3 *Patient*

5.3.1 " An environment which will provide an acceptable level of comfort, privacy and amenity."

It is taken for granted that the upgrading of any ward would be directed towards securing effective control of heat, light and ventilation, and shelter from the elements.

There is nothing to equal a single room for privacy. It is neither practical (not necessarily desirable) for all beds to be in single rooms, but it is preferable for all beds to be in rooms not bays. The best number of beds in a multi-bed room is four since this provides each patient with his own corner. No one likes being " the man in the middle." Two-bed rooms exaggerate social incompatabilities.

20%-25% of beds in single rooms and the remainder in 4-bed rooms is thought to be a practical compromise between the demands of amenity, privacy, isolation and segregation and financial and staffing limitations.

The width of the ward is a severe limiting factor and it may not be possible to enclose all the beds in rooms. Division into bays achieves some visual but not auditory privacy. Again the width of the original ward may limit the possible re-arrangement of beds and it has been noted that reduced bed spacing can seriously expose " corridor " patients to passing disturbance in layouts with beds parallel to the window walls. This arrangement is not satisfactory in a ward less than 25' 0" wide if 3 beds have to be accommodated in this width (cf. Ward 1). In narrower wards, bays with beds placed head to the window wall will be preferable. Bed centres at 8' 0" are recommended; anything less than 7' 0" is undesirable. Where bays are divided by partitions half glazed with clear or obscured glass, it has been noted that privacy is reduced and unwanted artificial light spills into adjacent bays. Glazing is not normally provided between bed rooms; neither is it desirable between bays.

In an acute ward ideally there should be some sitting space associated with each bed area, but a day room (not bay) is desirable to remove noisy activities (*e.g.* T.V.) from the bed areas. The day room should preferably be within nurse circulation routes.

Telephone bells cause great disturbance in wards, especially where beds are in open bays, and there is much to recommend the use of a staff location system with a receiver carried by the nurse in charge of the ward; at any time this can unobtrusively and reliably draw attention to incoming

calls. It is desirable to provide facilities for patients to make telephone calls.

5.3.2 " Facilities for their human needs."
Ideally in a sub-divided ward sanitary facilities should open off each bed area. Where this is not possible they should be located near the ambulant patients. The interests of flexibility between the sexes and maximum bed use are best served if sanitary facilities can be arranged in at least two groups.

The addition of extra w.c.s is not in itself necessarily a priority in upgrading. We have not observed excessive demands on existing w.c.s. What is worthwhile is to enclose washhand basins in separate cubicles so that they will be used. We have observed many basins unused for lack of privacy.

W.C. compartments should admit a wheelchair and have outward opening doors. They should have a handrinse basin. The usefulness of many washhand basins is reduced for want of a convenient shelf big enough to carry a toilet bag or handbag. Many mirrors are awkwardly positioned at a level which suits neither tall patients nor those in wheelchairs. Surprisingly often they are fitted horizontally rather than vertically. (After all people vary in height far more than width!) This is an area where points of detail such as basin height, coat hook provision, etc. are critical and it must be emphasised that one enclosed basin offering privacy is more useful than several exposed ones which do not.

Showers are becoming increasingly accepted by patients and can sometimes be fitted in upgraded wards where a bathroom cannot. Showers take less space and are significantly more hygienic than baths but their effectiveness depends on features such as adjustable height sprays with controlled temperatures and dry space for undressing and dressing.

A bath should be fitted in each ward unit. It should preferably be free-standing but in any case must not be boxed in so as to prevent the use of a patient hoist. The nurse call system must be easily identifiable and accessible to a patient in the bath.

Provision should be made for storing patients' clothing preferably within each curtained bed area but certainly within the ward unit.

5.3.3 " Facilities for the diagnosis and treatment of their condition."
For diagnosis and treatment of their condition patients are entitled to visual and auditory privacy. This depends on the extent to which it is possible to provide single bedrooms, a treatment room, and an interview room. Facilities for the care of the ill patients are best provided in an intensive nursing care area of the ward and here privacy must take second place to ease of observation. This intensive nursing care area should as far as practicable be located away from the disturbance of activity and traffic generated in the remainder of the ward.

The best location for the intensive nursing care area in a quiet part of the ward differs in particular upgradings. If beds are in **rooms** *this area is best placed in a cul-de-sac at the far end of the ward. If, however, the main groups of beds are in open* **bays**, *those for the more ill patients should be in enclosed rooms at the entrance end of the ward. This protects them from unnecessary disturbance, avoids difficulties occasioned by the removal of a deceased patient from the ward and saves distressed visitors having to pass through the open bed areas.*

5.3.4 " The reassurance of visual contact with nursing and medical staff, and an efficient nurse call system."

A compromise has to be struck between the need for privacy for patients and the reassurance of frequent visual contact with nursing and medical staff. A good compromise is an enclosed room with a continuous glazing strip across the full width of the corridor wall extending from 4′ 3″ to 6′ 0″ above the floor. This gives effective visual contact without undue exposure.

An effective nurse call system should be provided in all areas used by patients, *i.e.* at beds, w.c.s, washhand basins, baths, showers, and day rooms. Connected lights should be visible throughout the circulation area of the ward unit and should lead to the origin of the call. An indicator panel at the nurses' station only is of very limited use.

5.4 *Nurse*

5.4.1 " Observation of patients, commensurate with their condition." Provision should be made for the grouping of ill patients in an acute ward. From 12%-20% of the patients in an acute ward require intensive nursing care. This intensive nursing care area should offer good observation of patients and easy access to the nurse working facilities.
There is good reason to consider the possibility of grouping the acutely ill patients from more than one ward unit in one intensive nursing care area so that it would then justify its own nurse working accommodation. This concept of the integration of more than one nurse charge into a larger unit allows the concentration of trained nursing staff and equipment where they are most needed.

Several of the open wards we studied are divided by half glazed partitions—the glazing being ostensibly to facilitate observation. This causes difficulties in screening patients (e.g. for examination). In any case, even in the open position, bed curtains reduce the degree of observation possible. *See also paragraph 5.3.1 (page 29).*

5.4.2 " Facilities for the giving and receiving of reports and instructions, and maintaining records."

The staff base should be centrally located in relation to the patients and particularly closely related to the ill patients. While no one is actually stationed at the nurses' station during the day it is the natural base for the night nurses who should be able to see at least some of the ill patients. This is the place for holding and maintaining patients' records which should be accessible to the doctors, the sister and nurses. If it is not possible to provide for the house officer and sister adjacent to the nurses' station, the nurses' station should be planned to accommodate all three.

The nurses' station should be closely related to the preparation and disposal areas. Pressure of space in some upgrading schemes may oblige a compromise combination of the nurses' station with the preparation area. The telephone and preferential lighting of the nurses' station can disturb nearby patients especially at night, and in a ward with open bays consideration should be given to providing a glazed enclosure for the nurses' station.

5.4.3 " Storage of items of equipment. Facilities for the preparation and carrying out of nursing activities and for the disposal of items used in patient care."

For efficient working all preparation facilities should be grouped in one room, as should disposal facilities, and these two rooms should be placed next to each other. Much effort is wasted by the dispersal of preparation and disposal facilities throughout the ward; for example, linen, drugs and treatment trolleys are frequently stored in widely separated locations.

Ideally a small pantry should be included with the preparation area, but if there is no central dishwashing service it may be preferred to remove the noise of dish washing from the immediate vicinity of the patient.

The sluice should be adjacent to, or a separate part of, the disposal room.

With reliable daily supply of items required in wards the quantity of much of the stock at ward level can be reduced.

The preparation-disposal group can conveniently serve up to 30 *beds. This is true provided that this preparation-disposal working core is kept compact but if other accommodation intrudes,* (e.g. *offices, treatment rooms, lifts, stairs*) *the essential close relationship between the working core and the beds will be destroyed.*

Good practice requires a staff washhand basin in each single and multi-bed area. Upgraded wards should approach this ideal as nearly as practicable. We have seen accumulations of used linen at various places in different wards. The unpleasant effect of this could be reduced by more frequent collection.

5.4.4 " Cloakroom facilities."

A cloakroom and w.c. should be provided for the staff. This should not interfere with the essential relationships between the bed areas and ancillary working areas.

5.5 *Doctor*

5.5.1 " An environment which will provide for history-taking, examination, diagnosis and treatment of patients."

The doctor is responsible for the examination, diagnosis and treatment of patients which he will carry out in bed areas and treatment room. He requires visual and auditory privacy in order to work effectively. This can only be assured in a single room or a treatment room, and it should be noted that the doctor's requirements can only partly be met in multi-bed rooms. Open bays offer no auditory privacy.

If a treatment room is provided it can be used not only for treatment but for examination on admission and other purposes. Its function does not require it to be positioned at a central point in the ward.

5.5.2 " The right equipment in the right place at the right time."

For the doctor to be assured of the right equipment in the right place at the right time the ward must be provided with functionally effective nurse working rooms.

5.5.3 " Writing and discussion facilities and access to patients records."

The doctor needs easy access to the patients' records trolley; this requires him to be near the nurses' station. There should be space for the doctor to sit and write his notes undisturbed, and ideally there should be provision for private medical discussion out of earshot of the patients.

6 CONCLUSIONS

6.1 **General Considerations**

6.1.1 The design of a building contributes to the success of the department working within it. In the case of a ward upgrading, much of this contribution consists of points of detail, many of which have been analysed in relation to the requirements of the main users. Underlying these points of detail there are certain basic principles in dealing with which it is important to grasp the right priorities.

6.1.2 These priorities should be seen against a background of contributory considerations. It is assumed that any upgraded ward will provide shelter against the elements and control of heat, light and ventilation; this report does not attempt to deal with the measures necessary for basic environmental control, and a distinction is drawn between work required to render a building habitable and that required to make it suitable for use as a ward.

6.1.3 Particular features to be considered in an upgrading scheme depend on several factors including

the future life of the ward
the size and type of ward unit
the amount of money available
the work load.

6.1.4 We suggest that no building is normally worth major expenditure in upgrading if it cannot then last for a period of 15 to 20 years.

6.1.5 The alteration of an existing building is likely to necessitate compromise by architect, engineer and client. The first compromise will probably be a drop in bed numbers unless space standards are unacceptably reduced or the building significantly extended. Although the anticipated life of the unit obviously influences the extent of any upgrading, it is a mistaken policy to underprovide working areas in order to retain the maximum number of beds.

6.1.6 Another factor to be considered is the number of beds in the unit. In a standard acute ward a charge of 30 beds is the accepted optimum which can be served by one nursing team using one set of ancillary rooms. Self-contained charges of less than 20 beds are only economic in staff and facilities for highly specialised work (*e.g.* neuro-

surgery). The compromises of upgrading might lead to the consideration of integrating two small units to form one economic nursing charge.

6.1.7 Another background consideration to be remembered is that the ward unit does not function by itself. In making the decision to adopt certain patterns of work in the ward it is vital first to ensure that the necessary hospital supporting services are provided. A small and convenient ward pantry in the heart of the unit requires the support of a central kitchen and central dishwashing. The preparation room in a ward depends upon a topping up service of linen, C.S.S.D., pharmaceutical and other supplies, and the disposal room similarly depends upon a collection service of adequate frequency. Cost implications are discussed in Part Four, paragraph 12.2.

6.1.8 It is not sufficient simply to modernise what exists; it is necessary to examine critically the present ward organisation and function. To secure a real improvement in performance, outdated practices and restrictive traditions must be recognised and eliminated. The compromises of upgrading leave no room for irrelevant equipment or under-used accommodation.

6.2 Priorities

6.2.1 The importance to be attached to the various recommendations contained in this report must be assessed in the light of available funds and the physical limitations imposed by the existing building. In making this assessment four main principles have emerged from the study as essential to the design of an effective acute ward unit. These should be considered in the following order of priority:

First: The grouping of the most ill patients to facilitate observation by nurses who have ready access to nurse working areas. The resources of the ward can then be concentrated on those who most need them.

Second: The concentration of supply and disposal facilities in two adjacent areas. (In some cases this can be more a matter of re-organisation than re-planning, but the important thing is to have these two areas conveniently located for the nurses treating the ill patients.)

Third: The improvement of the level of privacy for the patient. (This involves partitioning, curtaining and the removal of noisy activities by the provision of a day room. The bed area is necessarily for some patients the location of treatment, bathroom and lavatory functions which need privacy.)

Fourth: The provision of acceptable w.c. and washing facilities for both ambulant and wheelchair patients.

6.2.2 These four principles are reproduced in Appendix 3 which follows summaries of " Ward Requirements " and " Factors to be Considered " in Appendices 1 and 2.

Part Three: THE PRINCIPLES APPLIED

7 CHOICE OF EXAMPLES

7.1 The factors to be considered in upgrading a ward and the four main principles which should be satisfied have been discussed in paragraphs 5 and 6 of Part Two of this report and are given in Appendices 2 and 3. The application of each of these factors has been studied in action in one or more wards. None of these wards, however, had the benefit of an objective and broadly based analysis of all these relevant factors. The object of this part of the report is to demonstrate and comment on hypothetical upgrading schemes which have been produced in the light of the conclusions reached in Part Two.

7.2 Effective and up-to-date ward units can be created in spite of the limitations imposed by existing buildings although they cannot always incorporate all the features found in new units designed to Planning Note* standards. The following examples of various standards of upgrading illustrate compromises which we consider to be acceptable in upgraded wards. Whatever the standard of sophistication, priority is given to basic principles.

7.3 A broad distinction has been made (Part Two, paragraph 5.1) between single and two-storey ward units which are relatively easy to extend and those on upper floors which are not. Insofar as the basic requirements of any ward are similar (Part One, paragraph 3.1) the two examples offered will present points of comparison with actual projects. Ward A is a typical E.M.S. ward and its problems are comparable to many single-storey ward units. Ward B is a representative example of ward units to be found in many multi-storey hospitals. Both A and B could undoubtedly be considered reasonable candidates for upgrading. The upgrading of each example is taken to three stages of completeness to offer a basis for the cost guidance in Part Four of this report and to demonstrate ways of implementing the recommendations contained in Part Two at various levels of expenditure.

8 SINGLE-STOREY

8.1 Ward A shows many of the features commonly found in single-storey ward units. Basically it is a long open ward approached through a passage flanked by the nurse working rooms, the sanitary facilities and a single bedroom.

8.2 This particular example is an E.M.S. ward, one of several connected by a spine corridor on a flat site. It is a cavity brick building with brick piers down the centre of the open ward. The flat roof consists of concrete slabs, screeded and finished with mineral felt. The walls are harled externally with painted brickwork internally. The painted concrete slabs form the ceiling, and the screeded concrete floor is finished with linoleum. Windows are standard metal; doors are flush wood, hollow core. Central heating is by hospital-type radiators on a low-pressure hot-water system. Rudimentary suspended tungsten lighting is arranged down each side of the ward. There are no bed head lights as such, and no nurse call system.

9 MULTI-STOREY

9.1 Ward B is characteristic of the ward accommodation on the upper floors of many multi-storey hospitals. Again there is a large open ward. In this example there are sanitary towers at one end flanking a long since glazed-in verandah. At the entrance end the few supporting rooms include the sister's room and a day " hall," while a 2-bed side room with a bathroom tower juts out to one side.

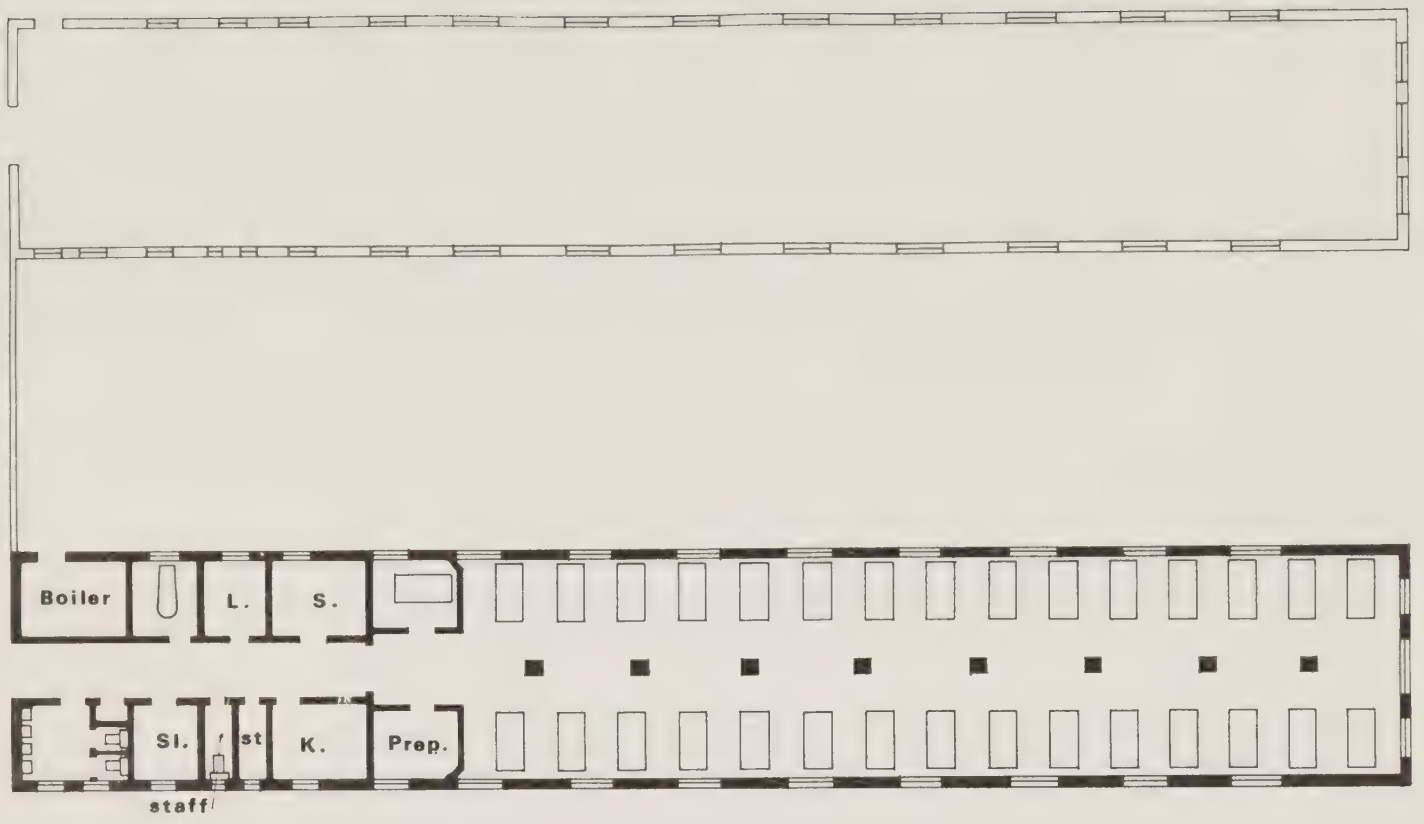
9.2 The ward is high and wide—wide enough (27′ 0″) to permit extra beds to be placed down the middle where a sterilizer and sink occupy the site of the original back-to-back stove. Walls and ceiling are painted plaster; floors are generally wood strip. Windows are timber sash and case; doors are wood framed and panelled. There is a low-pressure hot-water heating system with hospital-type radiators. Tungsten lights are suspended from the ceiling. There are no bed head lights or nurse call system.

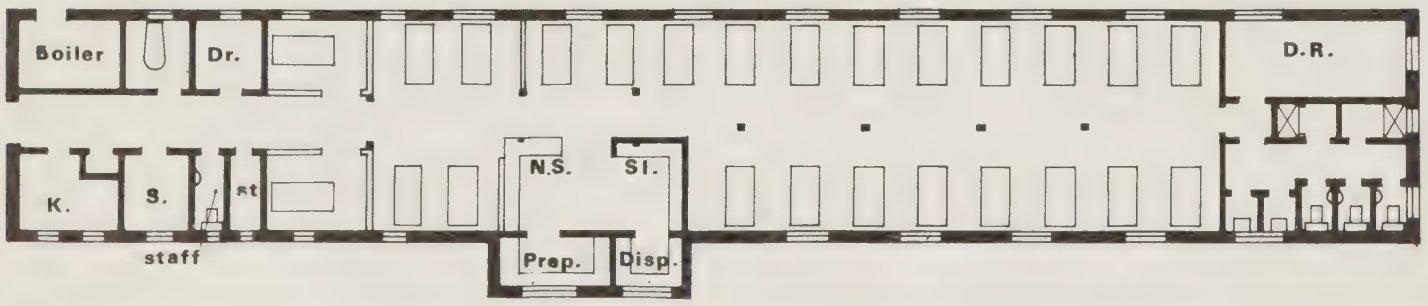
* Scottish Home and Health Department. *Ward design.* Edinburgh, H.M.S.O., 1963. (Hospital Planning Notes, 1)

10 THE SIX EXAMPLES

10.1 The following pages show how each of these two wards might be upgraded in three ways, more comprehensively if more money is available. The single-storey example (Ward A) shows how it is relatively easy to extend the building and thus to attain reasonable bed numbers in successively more comprehensive upgradings. On the other hand in the upper-floor example (Ward B) it would be uneconomic and probably difficult to extend, and in the major upgrading the bed numbers diminish to a serious extent.

10.2 Wards A1, A2 and A3 show successively minor, intermediate and major upgradings of the single-storey Ward A. Wards B1, B2 and B3 similarly show minor, intermediate and major upgradings of the upper-floor Ward B. In each case, as in the earlier examples in Part One, the ward is shown before upgrading at the top of the page and after upgrading underneath and the entrance is from the left side of the page. Supplementary information and comments on salient points are given opposite each pair of plans, and additional material is contained in Part Four: COST. The schemes can be examined in detail to see the extent to which each meets the requirements of a ward and satisfies the considerations analysed in Part Two, using Appendices 1 and 2 respectively as check lists. There is a fold-out key to the plans in Appendix 4.





A1.

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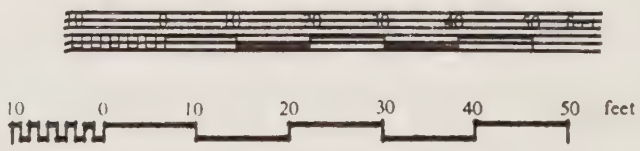


Ward A1

Single-storey ward; minor upgrading; 31 beds before upgrading, 25 after.

It must be accepted that while a minor upgrading can significantly improve an existing ward it will fall short of the standards (*i.e.* Planning Note) required in new accommodation. This example makes considerable compromises in both sizes and numbers yet still gains by ensuring that what *is* provided is in the right place and in a usable form. The intention here is to limit the alterations, and particularly any extensions, as far as possible while endeavouring to carry out the priority recommendations given in Appendix 3.

First

Since this remains substantially an open ward provision is made to group ill patients in two single rooms and two double bays at the entrance end of the unit near the nurses' station and associated facilities. Glazed partitions facilitate observation.

Second

A small extension enables all the preparation, disposal and sluice facilities to be accommodated in somewhat compressed form behind the nurses' station. Thus the essential nurse working facilities are concentrated in a convenient relationship to the beds and particularly to those of the ill patients.

Third

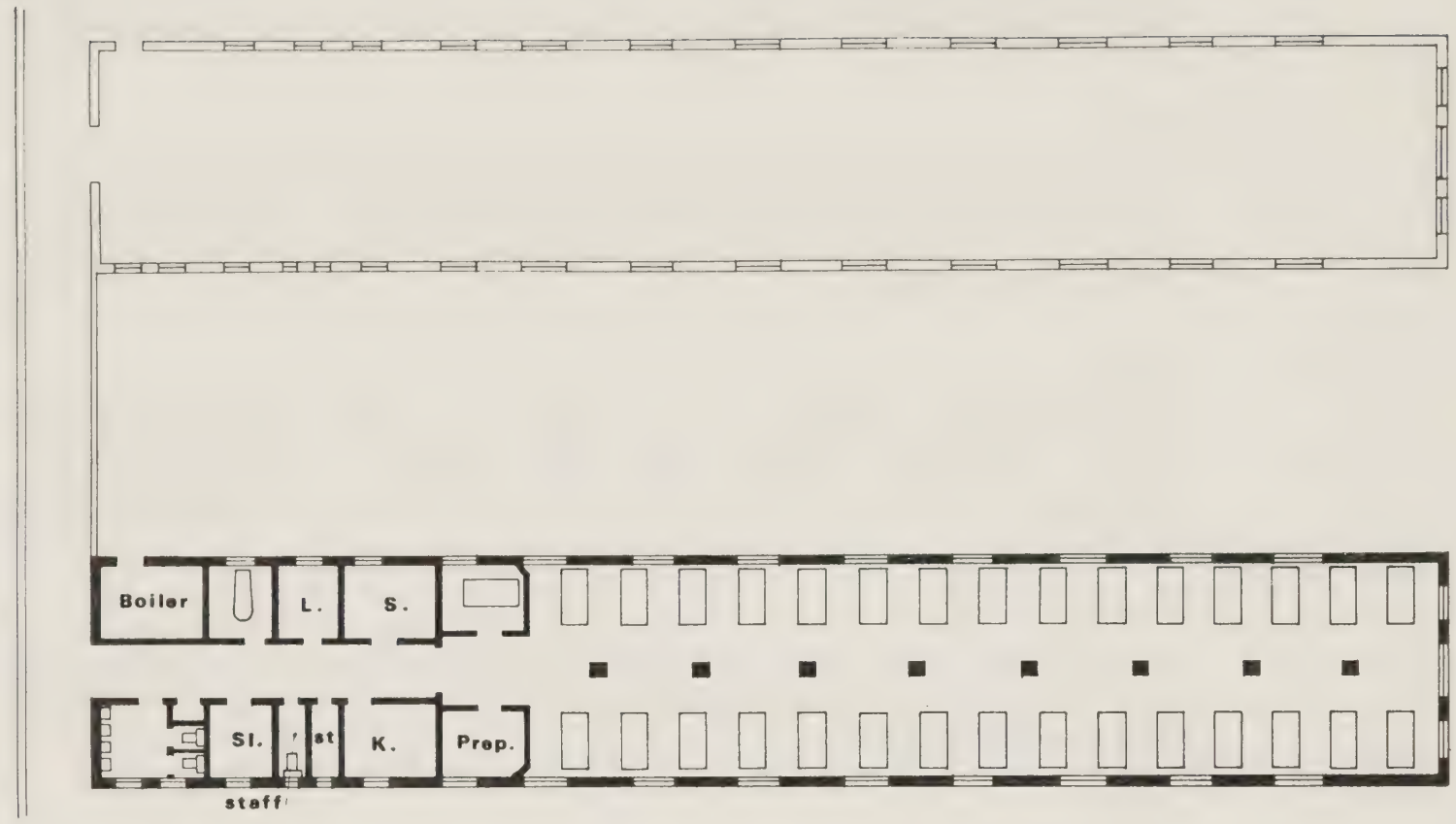
Privacy for patients is improved by the provision of bed curtains (previously lacking), by the relative segregation of the ill patients, and by the provision of a small day room.

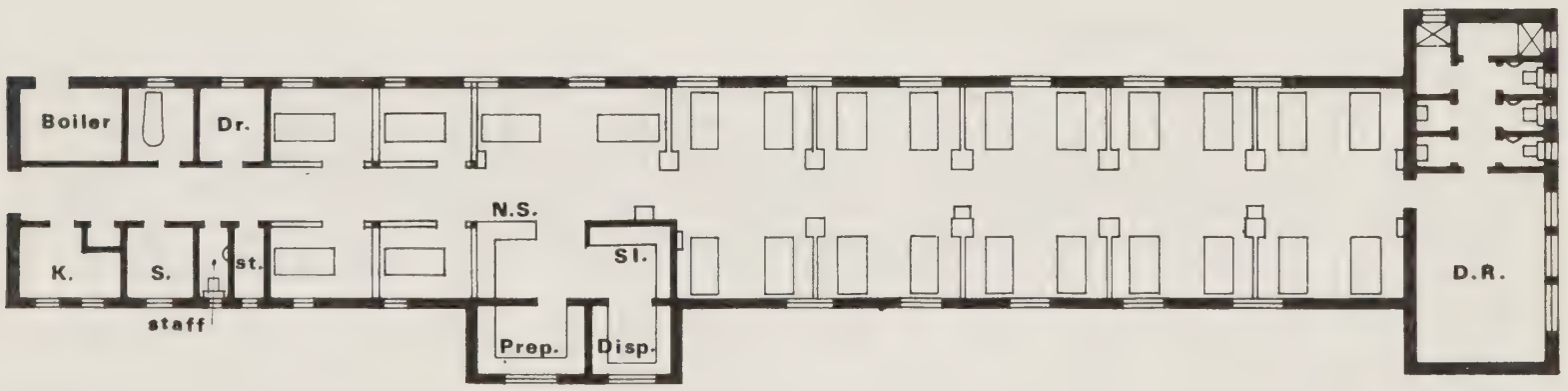
Fourth

Sanitary facilities are increased and (except for the bath) moved to a location convenient for the more ambulant patients. All facilities are in individual enclosed compartments.

Additional

The bulky brick piers are replaced by slender steel shafts to reduce their obtrusiveness as regards both movement and observation. The whole unit is rewired with new bedhead services and lighting. Walls and ceilings are plastered and painted and a new vinyl floor finish is laid. Existing windows and radiators are retained wherever possible.





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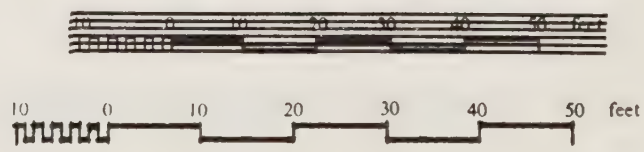


Ward A2

Ward A2
Single-storey ward; intermediate upgrading; 31 beds before upgrading, 26 after.

The higher level of expenditure assumed in an intermediate upgrading permits a higher standard of accommodation than can be achieved in a minor one, although in many ways compromises must still be accepted which would not arise in a new building. In alteration work a balance has to be struck between ideals and cost-effectiveness, and a basis for this assessment is discussed in Part Four: COST. The four basic principles (Appendix 3) remain the key to the problem.

First

Although divided into bays the ward is essentially an open one, and, for the reasons stated in paragraph 5.3.3 of Part Two, enclosed rooms (in this case four single rooms with half glazed partitions) are provided at the entrance end of the ward near the nurses' station complex. Two further beds in a large double bay are placed directly opposite the nurses' station.

Second

The preparation, disposal and sluice facilities support the nurses' station in a similar manner to Ward A1 but in a somewhat less confined extension. This gives the same effective grouping of these areas and convenient relationship to the bed areas. Staff washhand basins are located at intervals in the bed areas.

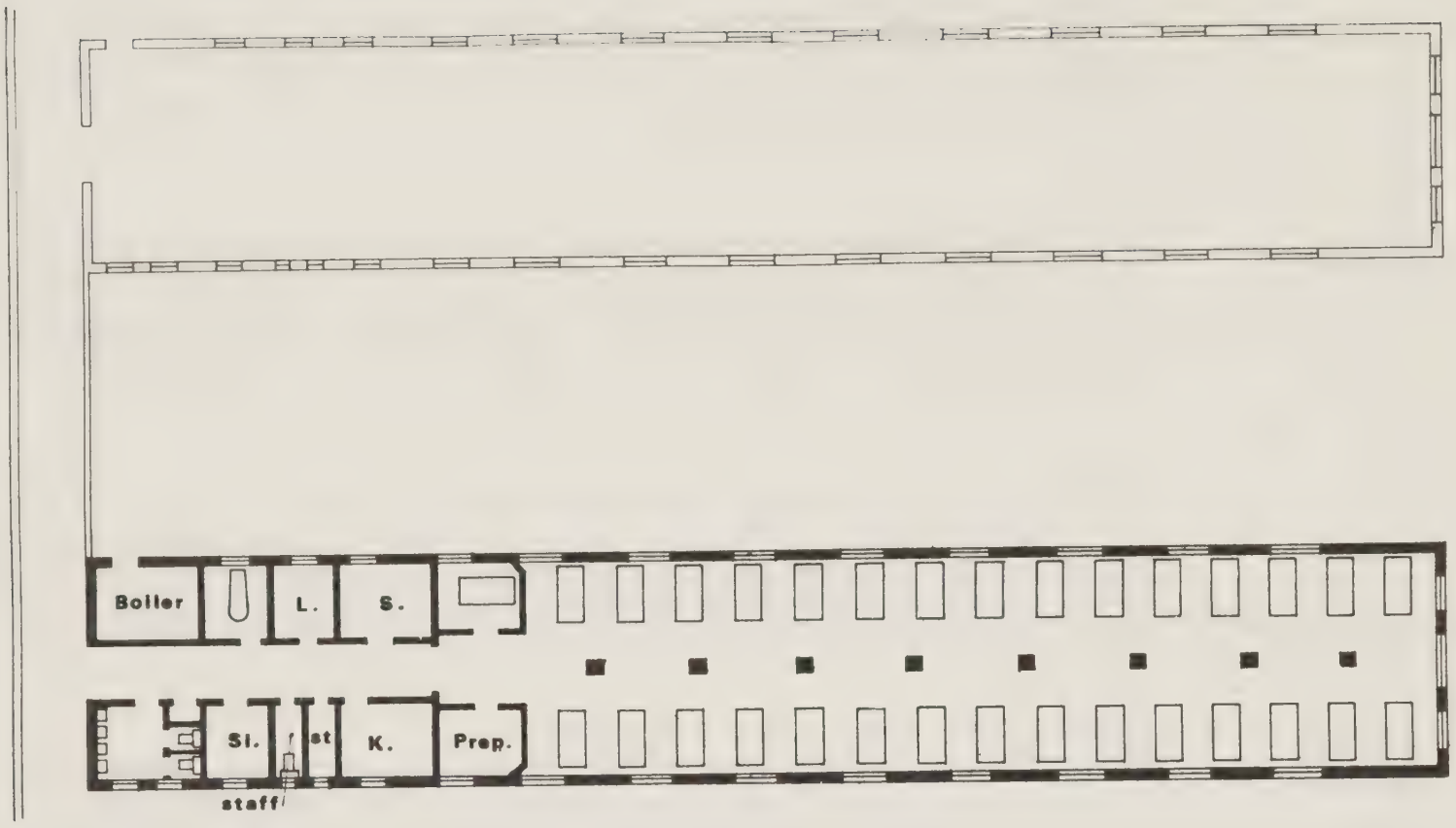
Third

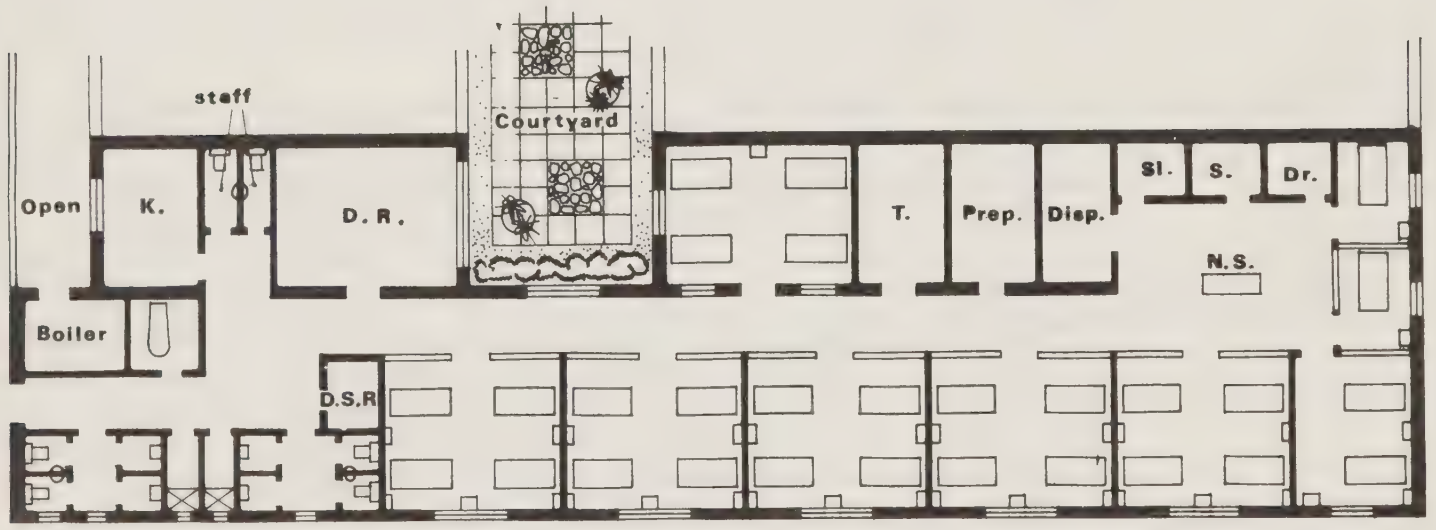
The partitioning of the open ward into bays is the same as that demonstrated in Ward 10 in Part One. In a ward 24′ 0″ wide this arrangement avoids the disturbance of patients and the reduction of bed spacing seen in bays arranged with 4 beds and 2 beds parallel to the window wall on either side of an offset passage. Each patient has the full range of bedhead services and has access to his wardrobe within his bed curtain. Partitions are 7′ 0″ high and are solid, not glazed. Privacy is further assisted by the grouping of ill patients in rooms and by the provision of a day room convenient for the more ambulant patients.

Fourth

Sanitary facilities are increased to the same scale as in Ward A1 and are similarly enclosed in compartments which will admit wheelchairs.

Additional
The brick piers are replaced by pairs of steel shafts set in the back-to-back wardrobes. Walls and ceilings are plastered and painted, with acoustic tiled ceiling in the day rooms and circulation areas. There is a new vinyl floor finish. The unit is rewired with new lighting and bedhead services. Existing windows and radiators are retained wherever possible.





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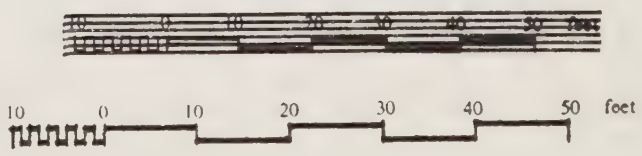


Ward A3
Single-storey ward; major upgrading; 31 beds before upgrading, 28 after.

A major upgrading seeks to achieve a standard of accommodation as near as possible to that deemed appropriate in new units. It is a matter for careful and experienced judgment to determine how near it is realistic to go without, on the one hand, reducing the bed numbers unreasonably or, on the other, reaching a point where the cost of further refinement is uneconomic. This example takes advantage of its relationship to neighbouring ward units entered from the same spine corridor. The space between the two blocks is 80% filled in, each unit taking half and sharing a party wall and a small landscaped courtyard, but having no other connection. Each unit becomes the mirror-image of the other.
Effect can be given to more of the considerations summarised in Appendix 2 but the same four basic principles underly this major scheme as in the two previous ones.

First

Since all patients are in enclosed rooms the intensive nursing care area can be placed in a cul-de-sac at the far end of the unit. There are two single rooms and a 2-bed room, with a 4-bed room opposite the nurses' station and nurse working rooms. The nurses are thus well placed for observation and care of the ill patients.

Second

Preparation, disposal and sluice rooms are next to the nurses' station and the sister's and doctors' offices which require access to patients' records. All these rooms are grouped in a convenient relationship to the bed areas with especial reference to the ill patients. A treatment room is provided next to this group. The kitchen is relatively remote because of the noise of dishwashing. (It is assumed that there is no central dishwashing service in this example.)

Third

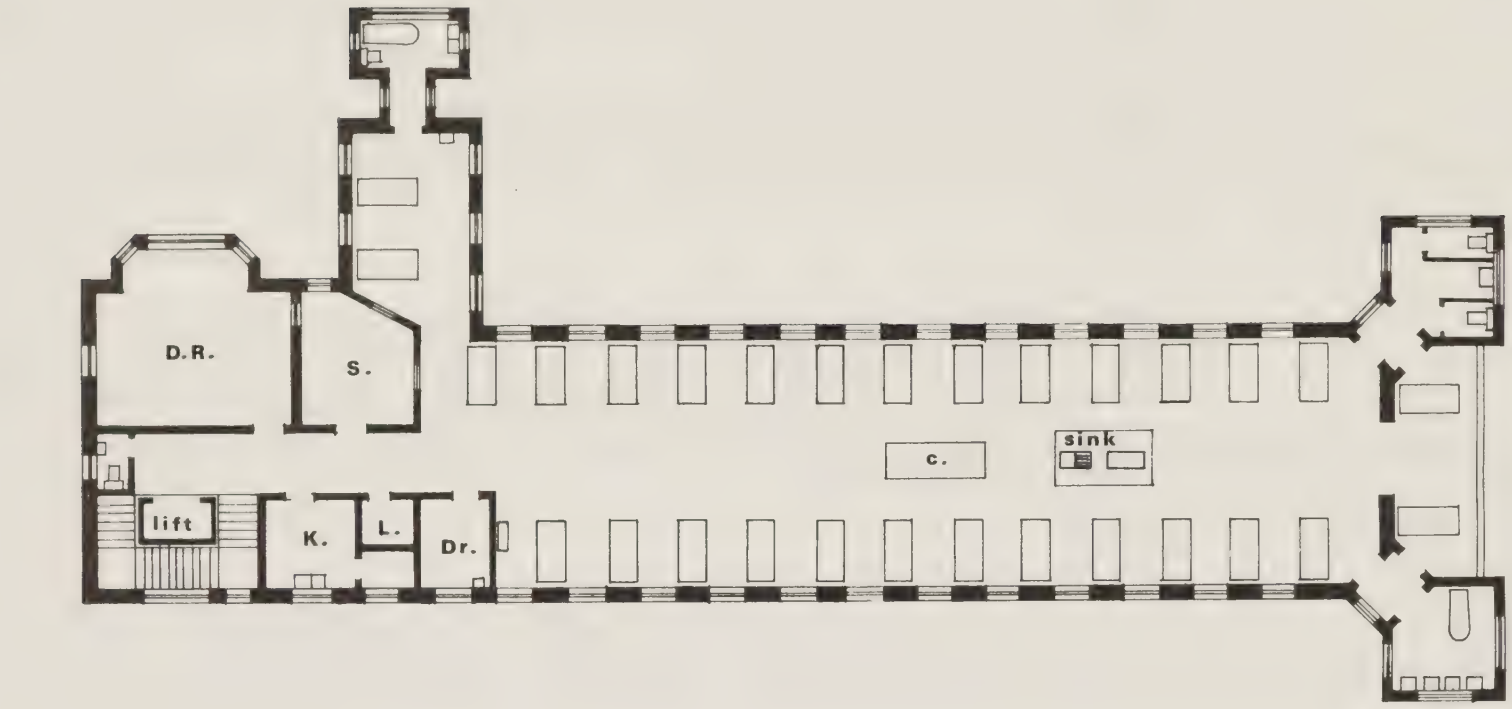
Apart from the intensive nursing care area, patients are accommodated in enclosed 4-bed rooms with a full width glazing strip in the corridor wall from 4′ 3″ to 6′ 0″ above floor level. This matches the level of visual and auditory privacy offered in new wards. There is a staff washhand basin in each room; each patient has a wardrobe within his curtained bed area. A day room is provided towards the more ambulant end of the ward; it opens on to a sheltered sitting area in a small landscaped courtyard.

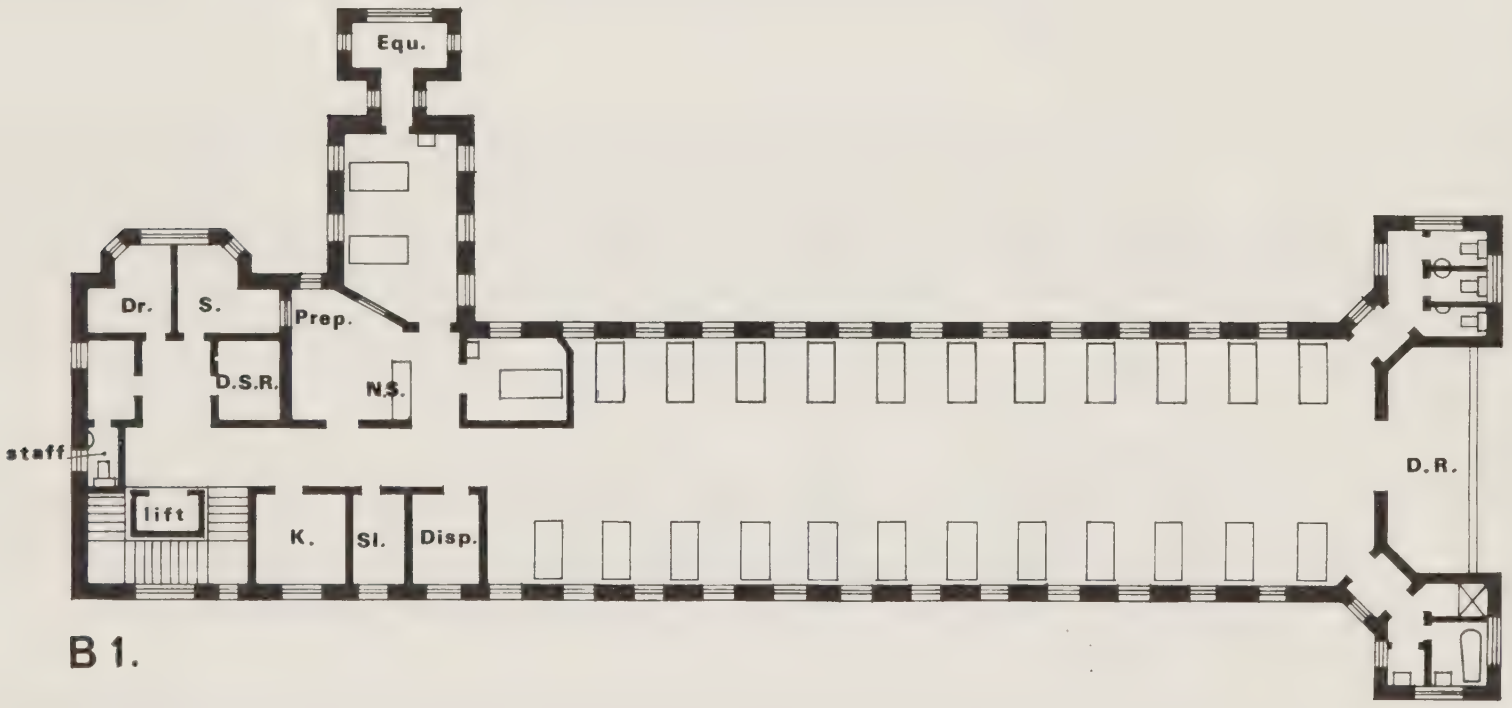
Fourth

The bathroom and two groups of lavatories and showers are arranged at the ambulant end of the ward. To provide sanitary facilities at each bed room would have reduced the bed complement unreasonably.

Additional

The walls between bedrooms replace the original brick piers. The extension has cavity brick external walls and block partitions with a light insulated roof decking. Walls and ceilings throughout are plastered and painted, with acoustic tiles in the day rooms and circulation areas. There is a vinyl floor finish. Heating and lighting are new throughout. Existing metal windows in bedrooms are removed and built up. New timber windows are formed in each bed room. The nurse working rooms and (partly) the 4-bed room next to the courtyard are top lit.





B 1.

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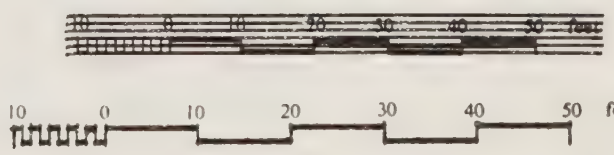


Ward B1

Upper-floor ward; minor upgrading; 29 beds before upgrading, 26 after.

This ward might be many floors above ground level, and economy would require the acceptance of the existing shell of the building without extension. Within this limitation this minor upgrading concentrates on observing as far as it can the principles listed in Appendix 3.

First

This is an open ward in which the beds for ill patients are grouped in rooms at the entrance end of the unit as in Wards A1, A2 and B2. A single room with glazed door is formed opposite the nurses' station/preparation room, and grouped with the existing 2-bed ward. (The original small bathroom is used as a store for the equipment which is most likely to be wanted for ill patients.)

Second

The simple modification of some existing rooms enables the nurse working facilities to be grouped at the entrance end of the open ward near the ill patients. Pressure of space has led to the incorporation of a nurses' station in the preparation room—a compromise which has been seen to work quite well when circumstances demand.

Third

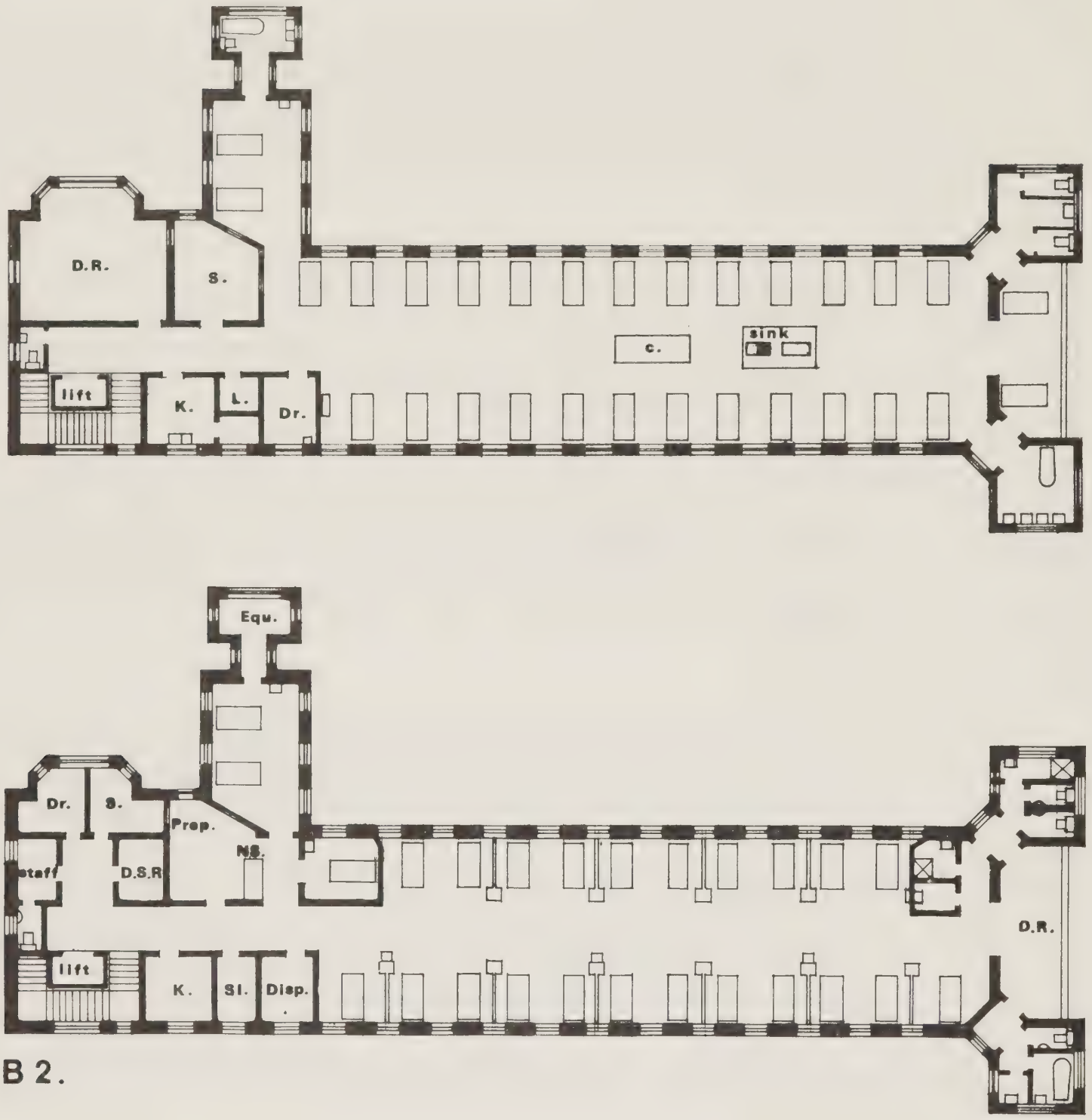
Privacy at the bed is limited to that afforded by bed curtains. The most ill patients are segregated in rooms near the nurses' station. The day room is moved to the far end of the unit where it is more convenient for the ambulant patients and also near the lavatories—in contrast to the original arrangement.

Fourth

Sanitary facilities are increased—although still fewer than ideal. All compartments are individually enclosed which assures privacy and so encourages patients to use them. The expedient of combining two fittings not liable to be needed urgently in one compartment (*e.g.* bath and washhand basin) makes full use of the limited space.

Additional

The unit was plastered and painted, but requires redecoration and rewiring with new bedhead services and lighting. The wood floor is covered with a sheet vinyl finish. Existing windows and radiators are retained.



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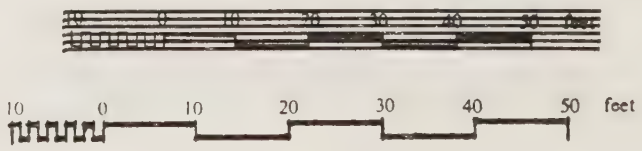


Ward B2

Upper-floor ward; intermediate upgrading; 29 beds before upgrading, 25 after.

Although this intermediate upgrading can afford to set a higher standard than Ward B1 the restriction on physical extension still holds good. Observation of the four basic principles leads to a similar pattern to Ward B1 but with improved amenity for patients and additional sanitation (involving the sacrifice of a bed).

First

Precisely the same provision is made for grouping ill patients as in Ward B1 for the same reasons. In addition, a convenient single-bed bay is available.

Second

The nurse working facilities are accommodated in the same way as in Ward B1 with the same relationship to the bed areas. The nurses' station is combined with the preparation room as before. Staff washhand basins are located at intervals in the bed areas.

Third

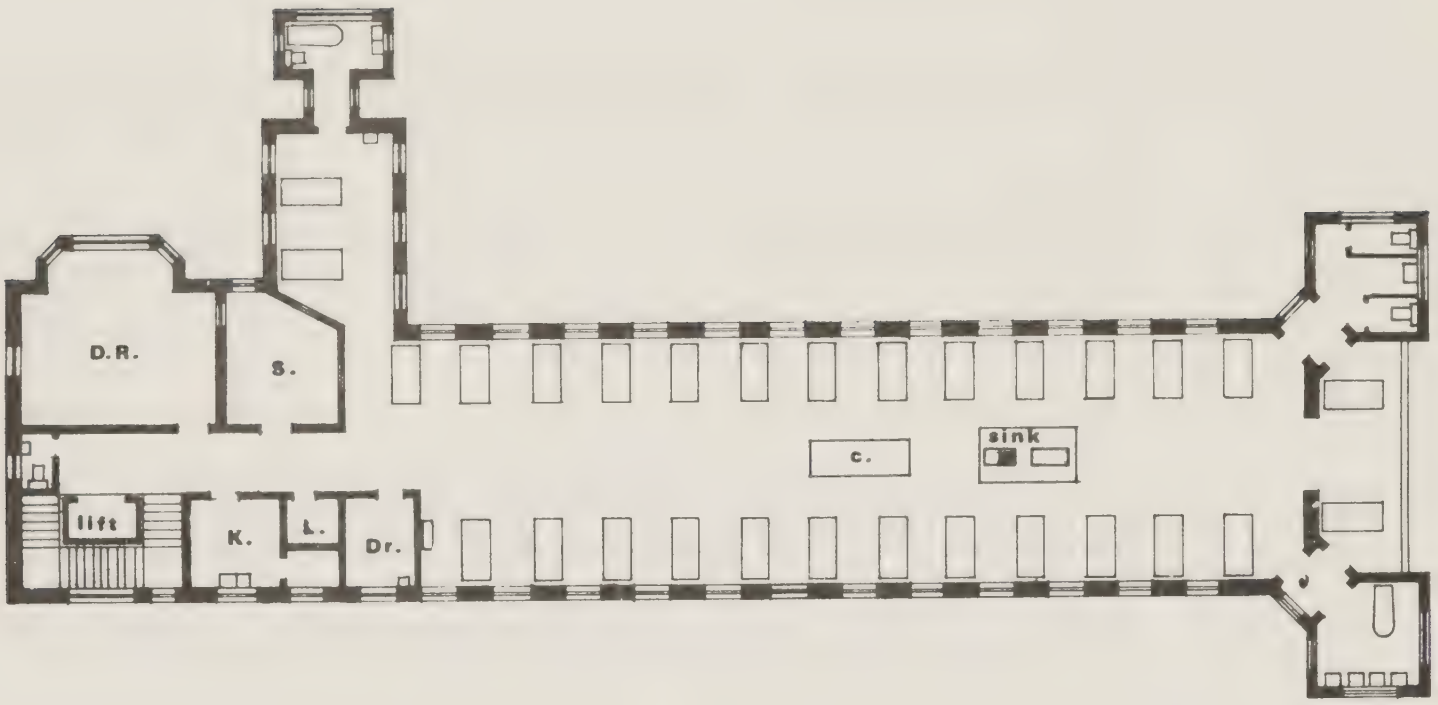
An advance is made in the privacy offered to patients. The same method of division into bed bays with 7′ 0″ high transverse partitions as in Ward 10 and Ward A2 gives a degree of visual privacy and enables each patient to have his wardrobe within his curtained bed area. Ill patients are segregated and there is a day room at the ambulant end of the ward; these last two features help to remove noisy activities from the bed areas.

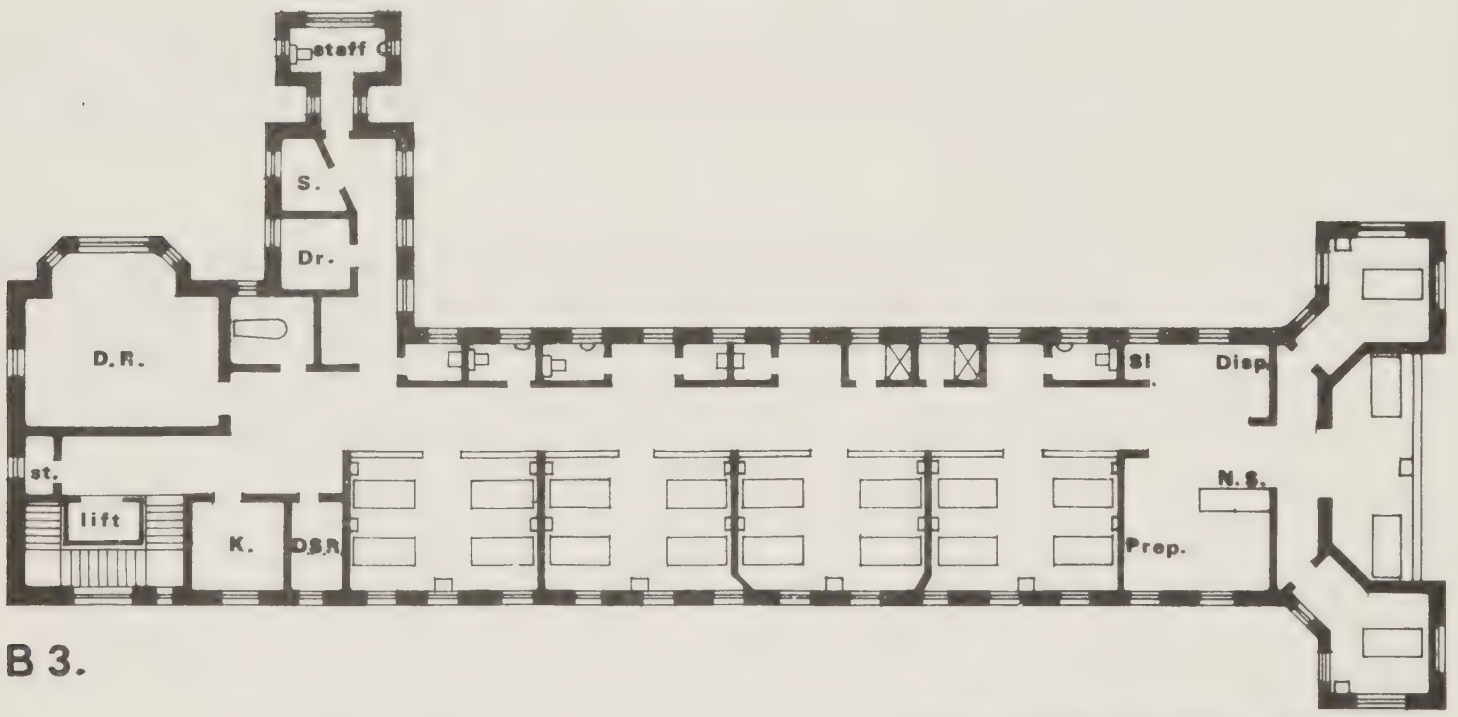
Fourth

The sanitary facilities are a little more generous than in the basic upgrading at the cost of losing another bed. As in the other five examples the door of each separate compartment can be opened outwards and will admit a wheelchair.

Additional

The unit is redecorated, rewired and fitted with new bedhead services and lighting. There is a new floor finish over the existing ward floor. Existing windows and radiators are retained.





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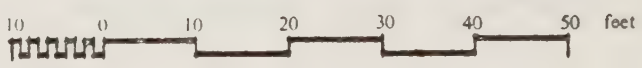


Ward B3

Upper-floor ward; major upgrading; 29 beds before upgrading, 20 after.

To carry out a major upgrading in this typical upper-floor ward without any extension to the building leads to a severe reduction in bed numbers which in itself will be enough to render it unacceptable in very many cases, (See Part Two, paragraph 6.1.6). It has only been possible to provide the 20 beds shown in this scheme by some compromise in the nurse working areas and the omission of the treatment room which is to be found in the other major upgrading example Ward A3. It seems that upper-floor wards of this kind cannot normally be given more than an intermediate upgrading without a major multi-storey addition to the building. This is seldom likely to be practicable and has been deemed to be beyond the scope of this upgrading study. This 20-bed upgraded ward is based on the same basic principles as the other examples.

First

As all patients are in enclosed rooms the ill patients are grouped in an intensive nursing care area at the far end of the unit. The two single rooms and the 2-bed room are next to the nurses' station and nurse working areas in a cul-de-sac.

Second

The essential nurse working areas are concentrated around the nurses' station convenient to the bed rooms and particularly to the intensive nursing care rooms. There has not been space to include the kitchen or the sister's and doctor's rooms in this group and they are provided at the entrance end of the unit. There is no treatment room.

Third

All patients except those in the intensive nursing care area are in the 4-bed rooms. There is a full-width observation strip in the corridor wall as in Ward A3 and each room contains a staff washhand basin. Each patient has a wardrobe within his curtained bed area. The segregated intensive nursing care area and the large day room at the entrance end of the unit help to reduce the sources of noise in the bed areas.

Fourth

The sanitary facilities are conveniently arranged across the corridor from the bedrooms. The corridor is lit at intervals by windows in bays which give additional manoeuvering space for beds and trolleys.

Additional

In the intensive nursing care area two windows are built up, and tiled dados replaced by painted plaster. Otherwise windows remain unaltered. The heating system is modified and extended to suit the alterations. The whole unit is redecorated and rewired. There are new bedhead services, new lighting and a new floor finish over the existing timber floor.

Part Four: COST

11 APPROACH

11. Approach

The cost factors affecting ward upgrading are all simple when taken individually but to combine them as a basis for sound economic decisions on each project presents considerable difficulty. Further, lack of adequate capital to renew buildings, coupled with immediate pressures for space and improvement, may frequently justify upgrading in cases which succeeding generations will think to have been unwise. Nevertheless it would appear sensible to make each decision as a conscious appreciation.

This part of the report deals only with building costs and aims:

(*a*) To give guidance, based on past experience, of the range of cost involved.

(*b*) To compare with hypothetical examples the choices available.

(*c*) To draw conclusions and suggest a logical approach to the appreciation of each project.

12 COST APPRAISAL OF INDIVIDUAL PROJECTS

12. Cost Appraisal of Individual Projects

To ensure that every aspect of cost is fully covered, we recommend that each project should be examined from the start under three separate headings as follows:

Maintenance	(Paragraph 12.1)
Work outwith the Ward	(Paragraph 12.2)
Upgrading	(Paragraph 12.3)

12.1 Maintenance

12.1.1 The term " Maintenance " as used throughout this Part of the report means the work necessary to prevent the existing building from running down; it cannot be directly related to Maintenance or Extraordinary Maintenance as defined in various financial publications of the Hospital Service (*e.g.* SRB. 51/40 as amended by SHM. 57/25).

12.1.2 The condition of every ward block will have a bearing on its suitability and cost for upgrading. It will normally be unwise to upgrade a building internally without bringing the general fabric into a condition where it has a substantial expectation of life ahead.
A decision to upgrade will therefore often bring forward in time substantial maintenance work (*e.g.* reslating of roofs) which might otherwise have been capable of postponement for a number of years.

12.1.3 We recommend that at an early stage the existing building should be inspected to evaluate:

(*a*) The condition and expected life of the existing structure and services within.

(*b*) The condition which would be acceptable if upgrading was carried out.

(*c*) The approximate cost of converting from (*a*) to (*b*).
This assessment will vary with each building and it is appreciated that no one can foretell exactly what maintenance issues will arise when a building is opened up for alterations. Nevertheless professional men with experience of alteration works should be able to make an intelligent appreciation.

12.1.4 No exact allocation of items to maintenance is possible to fit all situations, but a common-sense approach would be to include under this heading all work not resulting from the improvement proposals. This is amplified in Table 1.

12.1.5 The expectation of life of a building on which to base maintenance requirements must vary, but we suggest that no building is normally worth major expenditure in upgrading if it cannot then last for a period of 15 to 20 years. While this sets a general standard, immediate renewal of every item of the building to last for that period may not be

justified; thus a roof covering which, with routine maintenance, is judged capable of lasting 10 years might be left, whereas if it was judged to need replacing within 5 years it would be sensible to renew it while the upgrading is taking place.
The timing of this category of maintenance may also be affected by the extent to which it would interfere with the efficient operation of the ward; it would obviously be unsound to economise on maintenance which, if carried out later, could be expected to involve closing the ward for repairs within 5 years of upgrading.

12.2 Work Outwith the Ward

12.2.1 Reference has been made in Part Two, paragraph 6.1.7 to the repercussions the upgrading of a ward may have on central hospital facilities and services and the upgrading of interdepartmental areas such as connecting corridors. In addition engineering service mains and sources outwith the physical limits of the ward require appraisal for adequacy and expectation of life, together with the provision of lifts in appropriate cases.
These issues can be very far-reaching in their cost implications and should normally be the subject of a separate review and separate cost estimates. When examining the suitability of a particular ward for upgrading, a careful check is necessary to ensure that none of these implications has been overlooked and that provision for any cost involved has either already been made for the requisite period, or is included in the ward budget as a separate issue.

12.2.2 There is no value in making fine distinctions between where the ward stops and work outwith the ward begins, so long as the whole work is considered and costed under one or other heading; the essential point is to ensure that all aspects are considered. In the examples given in the tables, we have considered the ward unit as a building and allocated such items as roof repairs to " Maintenance " even where, in the case of a multi-storey block, they are mutual to several wards.

12.3 Upgrading

(Defined as improvements in conditions for patient, nurse and doctor.)

12.3.1 Having appreciated the inescapable costs referred to in paragraphs 12.1 and 12.2 it remains to consider the standard of upgrading thought possible or desirable. In an individual case this can be approached from two alternative points,
either

(*a*) To decide the best standard which can be achieved with the particular building and then to cost it

or

(*b*) To decide what money is available and to investigate the possible alternative improvements which can be carried out within this expenditure limit.

We think that the first and ideal approach should be in accordance with (*a*) but that the eventual solution will almost always be a compromise.

12.3.2 While running costs are not dealt with in this report, they are annually very significant in comparison with the capital cost of a reasonable standard of upgrading. The effectiveness of any upgrading scheme must therefore be very carefully evaluated; it would be unfortunate to place such undue emphasis on limitation of capital expenditure as to result in a solution which was inordinately expensive to run.

13 SIGNIFICANT COSTS

13.1 Table 2 shows a comparative analysis of the building costs of four completed projects, selected as representative examples from the ten studied in Part One, together with the six hypothetical projects discussed in Part Three (two types each with upgrading schemes to three different stages).
Section A of this table is a simple analysis to extract comparable upgrading costs; section B provides a more detailed analysis of these upgrading costs firstly into broad headings comparable to those used for new hospital buildings and secondly to show the total cost per bed and per square foot of

floor area provided. A time correction factor has been applied to all costs to equate them to tendering levels in December, 1966.

13.2 The Table demonstrates the wide range of cost (£505 to £1,022 per bed) involved in different buildings and different solutions; it also shows the high percentage attributable to services.
Generally the impact of maintenance has not proved high and this may be due to the high standard of routine maintenance in the wards seen.
Work outwith the ward has been trivial except in the case of Ward 9 where a lift was provided.

13.3 An attempt to relate costs of upgrading to the specific individual improvements in functional elements outlined in Appendix 2 was abandoned, because in alteration work such individual cost issues were found to be too interdependent to be realistically isolated. Instead in Table 3 we have supplied full cost plans of the hypothetical schemes so that the specialised reader can see details of the work covered and the cost levels assumed.

13.4 Individual functional recommendations summarised in Appendices 2 and 3 do not necessarily involve a comparable share of the total cost. Thus in one building, the highest priority improvements may be comparatively cheap whereas those thought to be less essential may inflate the cost disproportionately; in another building the situation could be reversed.
13.5 The Cost Estimates given in Tables 2 and 3 do not include loose furniture, fittings and equipment, or professional fees. Consequently the cost of these items has to be added to arrive at the total cost of any scheme.

14 COST CONCLUSION

14.1 As in all alteration work, no standard formula is practicable for ward upgrading projects and each scheme must be costed on its own merits. We hope that the hypothetical schemes have covered a wide enough range of types and standards to give a starting point for financial decisions. It cannot, however, be over-emphasised that an apparently minor difference in one building in comparison with another may have a major influence on the feasibility and cost of any upgrading.

14.2 The larger hospitals will often have a number of identical wards requiring upgrading; cost of maintenance and work outwith the ward will require individual consideration in each case, but the upgrading costs to similar standards should be comparable in repetitive buildings. It would therefore appear sensible in each such hospital to prepare alternative proposals and costs in some detail for a pilot ward (as was done here for the hypothetical schemes) and thus to establish the range of costs for different standards.
These costs, adjusted for different issues of maintenance and work outwith the ward, and updated for changes in building costs over the intervening period, should give useful guidance for budgeting in the future and should enable Hospital Boards to decide broadly the standards they can afford.
Where identical wards are found in several hospitals, arrangements should be made for initial studies to be undertaken with a view to their general application.

TABLE 1

COMMONSENSE APPROACH TO MAINTENANCE ALLOCATION

It is pointless to finesse in this allocation, but experience of projects analysed and costed has produced the following simple principles.

Item	*Allocation*
Repairs to foundations, walls, roofs, floors	Maintenance
Outside doors and windows	Patching—maintenance Any change of type or finish—upgrading
Repairs to partitions	Maintenance unless caused by upgrading work
Inside Doors	Patching—maintenance Any change of type or finish—upgrading
Wall Finishes	Major renewal of defective finish (*e.g.* unsound plaster)—maintenance Normal patching required in any alteration work Any change of type or finish —upgrading
Floor Finishes	Normally upgrading will involve total renewal—upgrading
Ceiling Finishes	Major renewal of defective ceilings—maintenance Normal patching required in alteration work Any change of type or finish —upgrading
Decoration	External—maintenance Internal—upgrading
Fittings and Built in Furniture	Rarely any significant maintenance charge
Plumbing (external)	Repairs to rhones and conductors—maintenance
Sanitary Fittings and Wastes	Upgrading
Hot and Cold Water Services	Renewal of defective cisterns, etc.—maintenance Normally upgrading involves virtual renewal of pipe runs—upgrading
Heating System	Calorifiers, boilers, plant and flue (unless increased)—maintenance Remainder usually—upgrading
Medical Gases	Normally—upgrading
Electrical Engineering	Normally upgrading involves virtual renewal—upgrading
Fixed Equipment	Normally fresh provision—upgrading
Drainage	Major renewal—maintenance Adaptation—upgrading

TABLE 2

SUMMARY OF COST ESTIMATES

NOTES: 1. Figures for analysed scheme are final costs adjusted to tendering levels at December 1966.

2. Figures for Hypothetical schemes are Quantity Surveyor's estimates adjusted to the same date.

(A) TOTAL COST

	Maintenance £	Outwith the Ward £	Upgrading £	Total £
Analysed Schemes				
Ward 1	1,062	—	14,149†	15,211
Ward 7	129	90	15,810†	16,029
Ward 9	501	2,456*	23,754†	26,711
Ward 10	1,009	—	17,463†	18,472
Hypothetical Schemes				
Ward A1	400§	—	13,056†‡	13,456
Ward A2	378§	—	18,066†‡	18,444
Ward A3	366§	—	28,612†‡	28,978
Ward B1	1,996§	790§	10,095†‡	12,881
Ward B2	1,996§	790§	13,000†‡	15,786
Ward B3	1,951§	790§	16,923†‡	19,664

* Includes provision of bed lift.
† For broad analysis see succeeding Table (B)
§ For details see Table 3(A)
‡ For detailed analysis see Table 3(B)

(B) COMPARATIVE UPGRADING COSTS

	Preliminaries and Contingencies		*Structure*		*Finishes*		*Fittings*		*Services*		*Total*		*Total per Bed*	*Total per sq. ft.*
	£	%	£	%	£	%	£	%	£	%	£	%	£	s. d.
Analysed Schemes														
Ward 1	457	3.2	4,442	31.4	2,010	14.2	979	6.9	6,261	44.3	14,149	100	505	72 3
Ward 7	1,281	8.1	3,539	22.4	3,303	20.9	1,632	10.3	6,055	38.3	15,810	100	545	52 2
Ward 9	1,240	5.2	7,521	31.7	2,838	11.9	1,481	6.2	10,674	45.0	23,754	100	880	80 7
Ward 10	1,271	7.3	4,126	23.6	2,521	14.4	2,172	12.4	7,373	42.3	17,463	100	728	60 4
Hypothetical Schemes														
Ward A1	1,476	11.3	2,965	22.7	2,616	20.0	1,065	8.2	4,934	37.8	13,056	100	522	73 6
Ward A2	2,043	11.3	4,853	26.9	3,280	18.2	2,095	11.6	5,795	32.0	18,066	100	695	87 3
Ward A3	3,236	11.3	8,492	29.7	4,274	14.9	2,405	8.4	10,205	35.7	28,612	100	1,022	107 11
Ward B1	1,141	11.3	1,064	10.5	2,055	20.4	1,030	10.2	4,805	47.6	10,095	100	388	42 3
Ward B2	1,469	11.3	1,682	12.9	2,129	16.4	1,975	15.2	5,745	44.2	13,000	100	520	54 5
Ward B3	1,914	11.3	2,252	13.3	2,583	15.3	1,785	10.5	8,389	49.6	16,923	100	846	70 9

TABLE 3

DETAILED COST ESTIMATES

(A) MAINTENANCE AND WORK OUTWITH THE WARD

NOTE: The basis of cost is Fixed Price Tendering levels at December 1966 in the Central Scotland Area.

WARD A SCHEMES

	Cost Estimate		
	Ward A1 £	*Ward* A2 £	*Ward* A3 £
Maintenance			
Preliminaries and Contingencies	45	43	41
Minor repairs to bituminous felt roofing	75	75	75
Minor repairs to external rendering	50	50	40
Minor repairs to windows, glass and repointing	40	40	—
Minor repairs to internal doors and ironmongery	45	—	—
Patching of existing floor screed to receive damp-proof course	70	70	70
External Painterwork complete	75	100	140
TOTAL MAINTENANCE	£400	£378	£366
TOTAL WORK OUTWITH THE WARD	NIL	NIL	NIL

WARD B SCHEMES

	Cost Estimate		
	Ward B1 £	*Ward* B2 £	*Ward* B3 £
Maintenance			
Preliminaries and Contingencies	226	226	221
Reslating of existing roof (900 sq. yds.)	1350	1350	1350
Pointing repairs to external walls	60	60	60
Minor repairs to windows, glass and repointing	100	100	100
Minor repairs to internal doors and ironmongery	40	40	—
Minor repairs to timber flooring	25	25	25
Minor repairs to tiled and plaster walls	55	55	55
Minor repairs to plaster ceilings	40	40	40
External Painterwork complete	100	100	100
TOTAL MAINTENANCE	£1996	£1996	£1951
Work Outwith the Ward	£	£	£
Preliminaries and Contingencies	90	90	90
Overhaul of Electric Lift	200	200	200
Major repairs to worn treads of existing stair	500	500	500
TOTAL WORK OUTWITH THE WARD	£790	£790	£790

TABLE 3

DETAILED COST ESTIMATES

(B) UPGRADING

WARD A1

	Before Upgrading	*After Upgrading*
Floor Area	3412 sq. ft.	3552 sq. ft.
Number of Beds	31	25

Description of Existing Ward:—See Part Three, paragraph 8 of this report

COST ESTIMATE

	Total £	*per Bed* £ s. d.	*per sq. ft.* s. d.
Preliminaries (10%)	1158	46 6 5	6 6¼
Contingencies (2½%)	318	12 14 5	1 9¼
Structural Elements			
Demolition of partitions and stripping out for structural and service trades	235		
New Extension at Disposal and Preparation Rooms Foundations, solid concrete floor, 11″ walls harled, precast roof slab insulating board and 3 layer felt roof, lightweight block partitions, standard steel windows	440		
Alterations to Existing Buildings Replace structural brick piers with steel columns and beams (£550) Alterations to existing walls, new lightweight block partitions and softwood glazed screens (£1162) Steel fire escape door and steel window at Dayroom (£70)	1782	118 12 0	16 8¼
Internal Doors Flush solid core to all new openings (£25 per leaf) Half glazed to single bedrooms, corridor and ward entrance (£30 per leaf)	508		
TOTAL STRUCTURAL ELEMENTS £2965			
Finishes			
Wall Finishes ½″ plaster to all new and existing walls P.V.C. sheeting on plaster to shower compartments (40/- per sq. yd.)	704	28 3 2½	3 11¾
Floor Finishes Damp-proof course, 2″ screed, vinyl floor sheeting to all new and existing floors (58/6 per sq. yd.)	1154	46 3 2½	6 6
Ceiling Finishes Acoustic tiles with timber suspension to dayroom (22 sq. yds. @ 42/9) Remainder ½″ plaster	383	15 6 4½	2 1¾

	Total £	*per Bed* £ s. d.	*per sq. ft.* s. d.
Internal Decoration Simple decoration throughout	375	15 0 0	2 1¼
TOTAL FINISHES—£2616 Per Bed —£104 12 9½ Per sq. ft.— 14 8¾			
Fittings and Built in Furniture			
Storage and Worktop Cupboards in: Kitchen (£160) Preparation (including Drug Cupboard and C.S.S.D. Dispenser) (£150) Disposal and Sluice (including Ventilated Cupboard) (£245) Nurses Station Desk and Cupboard (£130) Sundry shelving and ironmongery, mirrors, belting and splashbacks to Staff, Sister, Doctor and Cleaners' Room and Toilets (£75) Bed Curtain Rails (£295) Seats and Curtain Rails at Showers (£10) No provision for Patients' Wardrobes			
TOTAL FITTINGS AND BUILT-IN FURNITURE	1065	42 12 0	6 0
Services			
External Plumber and Drainage Minimum alterations; P.V.C. Rhones and Downpipes at New Extension	230	9 4 0	1 3½
Sanitary Fittings and Wastes: 3—W.H.B.s (£12 each) 4—Hand Rinse Basins (£10 each) 4—W.C.s (£15 each) 1—Bath (£50) 3—Single stainless steel sinks (£45 each) 2—Shower fittings (£50 each) 1—Cleaners' sink (fireclay) (£18) 1—Bed Pan Destructor (£300)	1214	48 11 2½	6 10
Hot and Cold Water Supplies and Overflows £35 per fitting; no allowance for new mains cisterns or cylinders	735	29 8 0	4 1½
Heating Services Minimum adaptation of existing heating pipes with 5 new radiators (£30 each)	250	10 0 0	1 5
Electrical Services Total renewal including sub-mains gear 40 lighting points (£5 each) 40 Power Points (£6 each) 25 Bedhead units (£30 each) 2 Clocks (£8 each) Fire Alarm System (£40) Luminous Call (£200) 25 Shaver Points (£4 each) T.V. aerial (£10) Emergency Lighting (£40) Mobile X-Ray Point (£20)	1950	78 0 0	10 11¾

	Total £	*per Bed* £ s. d.	*per sq. ft.* s. d.
Kitchen and other Equipment	455	18 4 0	2 7
NOTE: No central dishwashing service will be available			
1 Cooker (£80)			
1 Dishwasher (£140)			
1 Refrigerator (£75)			
1 Water Boiler (£60)			
2 Hosereels (£50 each)			
Builders Work in connection with Services	100	4 0 0	0 $6\frac{3}{4}$
TOTAL SERVICES—£4934			
Per Bed —£197 7 $2\frac{1}{2}$			
Per sq. ft.— 27 $9\frac{1}{2}$			
TOTAL UPGRADING WARD A1	£13056	£522 4 10	73 6

TABLE 3 (B) UPGRADING continued

WARD A2

	Before Upgrading	*After Upgrading*
Floor Area	3412 sq. ft.	4142 sq. ft.
Number of Beds	31	26

Description of Existing Ward: See Part Three, paragraph 8 of this report

COST ESTIMATE

	Total £	*per Bed* £ s. d.	*per sq. ft.* s. d.
Preliminaries (10%)	1602	61 12 $3\frac{3}{4}$	7 $8\frac{3}{4}$
Contingencies ($2\frac{1}{2}$%)	441	16 19 3	2 $1\frac{1}{2}$
Structural Elements			
Demolition and stripping out As Ward A1 including removal of existing doors	252		
New Extension at Disposal and Preparation As Ward A1 over an enlarged floor area	532		
New Extension at Dayroom and Toilets Foundations, floor, wall and roof construction as new extension at Disposal and Preparation; single glazed redwood casement windows in place of standard metal	1405		
		186 13 $0\frac{3}{4}$	23 $5\frac{1}{2}$
Alterations to Existing Buildings Replace structural brick piers with steel columns and beams (£460) Alterations to walls, new partitions and screens as Ward A1 with additional partitions between 2 bedrooms (£1536)	1996		
Internal Doors Flush solid core doors throughout (£25 per leaf) Half glazed as for Ward A1 (£30 per leaf)	668		
TOTAL STRUCTURAL ELEMENTS —£4853			
Finishes			
Wall Finishes Plaster throughout with P.V.C. sheeting in showers as Ward A1	742	28 10 $9\frac{1}{4}$	3 7
Floor Finishes Damp-proof Course 2″ screed and Vinyl sheeting as Ward A1 (58/6 per sq. yd.)	1346	51 15 $4\frac{1}{2}$	6 6
Ceiling Finishes Acoustic tiles and timber suspension to Dayroom, corridor between service rooms and central circulation of main ward (196 sq. yds. @ 42/9) Plasterboard and plaster on framing to open faces of suspended ceilings. Remainder $\frac{1}{2}$″ plaster	742	28 10 $9\frac{1}{4}$	3 7
Internal Decoration As Ward A1	450	17 6 $1\frac{3}{4}$	2 2
TOTAL FINISHES—£3280 per Bed —£126 3 $0\frac{3}{4}$ per sq. ft.— 15 10			

	Total £	*per Bed* £	*per sq. ft.* s. d.
Fittings and Built in Furniture			
Storage and Worktop Cupboards in: Kitchen (£160) Preparation (including Drying Cupboard and C.S.S.D. Dispenser) (£160) Disposal and Sluice (including Ventilated Cupboard) (£250)			
Nurses Station Desk and Cupboard (£130)			
Sundry shelving, mirrors, ironmongery as Ward A1 (£85)			
Bed Curtain Rails (£260)			
Seats and Curtain Rails at Showers (£10)			
Patients' Wardrobes (£40 each)			
TOTAL FITTINGS AND BUILT-IN FURNITURE	2095	80 11 $6\frac{1}{4}$	10 $1\frac{1}{4}$
Services			
External Plumber and Drainage Minimum alterations; P.V.C. Rhones and Downpipes at New Extensions	415	15 19 $2\frac{1}{2}$	2 0
Sanitary Fittings and Wastes As Ward A1 with two additional W.H.B.s in main ward area	1300	50 0 0	6 $3\frac{1}{2}$
Hot and Cold Water Supplies and Overflows As Ward A1 (£35 per fitting)	800	30 15 $4\frac{3}{4}$	3 $10\frac{1}{2}$
Heating Services Minimum adaptation of existing as Ward A1 with 9 new radiators (£30 each)	350	13 9 $2\frac{1}{2}$	1 $8\frac{1}{4}$
Electrical Services As Ward A1 with necessary addition-all lighting and power points; one additional mobile X-Ray point	2075	79 16 2	10 0
Medical Gases Local Oxygen supply installation with copper pipework and concealed wall outlet to intensive care area only (5 outlets)	300	11 10 $9\frac{1}{4}$	1 $5\frac{1}{2}$
Kitchen and Other Equipment As Ward A1	455	17 10 0	2 $2\frac{1}{2}$
Builders Work in Connection with Services	100	3 16 $11\frac{1}{4}$	0 $5\frac{3}{4}$
TOTAL SERVICES—£5795 per Bed —£222 17 $8\frac{1}{4}$ per sq. ft.— 28 0			
TOTAL UPGRADING WARD A2	£18066	£694 16 $10\frac{3}{4}$	87 3

TABLE 3 (B) UPGRADING continued

WARD A3

	Before Upgrading	*After Upgrading*
Floor Area	3412 sq. ft.	5304 sq. ft.
Number of Beds	31	28

Description of Existing Ward: See Part Three, paragraph 8 of this report

COST ESTIMATE

	Total £	*per Bed* £ s. d.	*per sq. ft.* s. d.
Preliminaries (10%)	2538	90 12 $10\frac{1}{4}$	9 $6\frac{3}{4}$
Contingencies ($2\frac{1}{2}$%)	698	24 18 $6\frac{3}{4}$	2 $7\frac{3}{4}$
Structural Elements			
Demolition and stripping out	386		
Foundations and Ground Floor Slab Concrete strip foundations. Solid concrete floor	1173		
External Walls Building up of existing window openings and slapping of new openings; 11″ brick walls harled in extension	1839		
Windows Redwood single glazed casement windows (25/- per sq. ft.). Fire escape door (30/- per sq. ft.)	671		
Roof, Roof Finish, Rooflights Lightweight steel deck in extension with insulating board and 3 layer felt. Proprietory Ventilating Rooflights to side rooms at mutual walls (£50 each)	1330	303 5 $8\frac{3}{4}$	32 $0\frac{1}{2}$
Partitions and Internal Screens Replacement of existing brick piers with steel columns set in new structural brick partitions (£430) $4\frac{1}{2}$″ brick and 3″ lightweight block partitions Redwood half glazed and standard partitions to bedrooms	2063		
Internal Doors Flush solid core doors (£25 per leaf) Half glazed to single bedrooms, corridor and ward entrance (£30 per leaf) Sliding door with glazed panel to 4 bedrooms (£35 each)	905		
Paving Slabs to Open Courtyard	125		
TOTAL STRUCTURAL ELEMENT—£8492			
Finishes			
Wall Finishes Plaster throughout with P.V.C. sheeting in showers as Ward A1	1263	45 2 $1\frac{3}{4}$	4 $9\frac{1}{4}$
Floor Finishes Damp-proof Course, 2″ screed and vinyl sheeting as Ward A1 (58/6 per sq. yd.)	1724	61 11 $5\frac{1}{4}$	6 6
Ceiling Finishes Acoustic tile and timber suspension to Dayroom and all circulation areas (183 sq. yds. @ 42/9) Remainder $\frac{1}{2}$″ plaster	757	27 0 $8\frac{1}{2}$	2 $10\frac{1}{4}$
Internal Decoration As Ward A1	530	18 18 $6\frac{3}{4}$	1 $11\frac{3}{4}$
TOTAL FINISHES—£4274 per Bed —£152 12 $10\frac{1}{4}$ per sq. ft.— 16 $1\frac{1}{4}$			

	Total £	*per Bed* £ s. d.	*per sq. ft.* s. d.
Fittings and Built in Furniture			
Storage and Worktop Cupboards in: Kitchen (£180) Preparation (including Drug Cupboard and C.S.S.D. Dispenser) (£200) Disposal and Sluice (including Ventilated Cupboard) (£300)			
Nurses Station Desk and Cupboard (£100)			
Sundry shelving, mirrors, ironmongery as Ward A1 with additional allowance for domestic service and treatment rooms (£145)			
Bed Curtain Rails (£350)			
Seats and Curtain Rails at Showers (£10)			
Patients' Wardrobes (£40 each)			
TOTAL FITTINGS AND BUILT-IN FURNITURE	2405	85 17 $10\frac{1}{4}$	9 1
Services			
External Plumber and Drainage Minimum alterations, new cast iron drains under the floor. P.V.C. rhones and downpipe at extension as Ward A1	600	21 8 $6\frac{3}{4}$	2 $3\frac{1}{4}$
Sanitary fittings and Wastes Standard of Fitting as Ward A1 14—W.H.B.s; 6 Hand Rinse Basins; 6 W.C.s 1—Bath 3—Stainless steel sinks 2—Shower fittings 1—Slop sink 1—Bed pan destructor	1778	63 10 0	6 $8\frac{1}{2}$
Hot and Cold Water Supplies and Overflows With additional storage (£45 per fitting)	1620	57 17 $1\frac{3}{4}$	6 $1\frac{1}{4}$
Heating Services Complete renewal of all flow and return pipes and provision of 35 new radiators (£30 each) No allowance for new boiler or calorifier	2652	94 14 $3\frac{1}{2}$	10 0
Electrical Services As Ward A1 with additional lighting and power points; two additional clocks and mobile X-Ray points	2750	98 4 $3\frac{1}{2}$	10 $4\frac{1}{2}$
Medical Gases Local Oxygen supply as Ward A2 to intensive care area only (3 outlets)	200	7 2 $10\frac{1}{4}$	0 9
Kitchen and Other Equipment As Ward A1	455	16 5 0	1 $8\frac{1}{2}$
Builders' Work in Connection with Services	150	5 7 $1\frac{3}{4}$	0 $6\frac{3}{4}$
TOTAL SERVICES—£10205 per Bed —£364 9 $3\frac{1}{2}$ per sq. ft.— 38 $5\frac{3}{4}$			
TOTAL UPGRADING WARD A3	£28612	£1021 17 $1\frac{3}{4}$	107 11

TABLE 3 (B) UPGRADING continued

WARD B1

	Before Upgrading	*After Upgrading*
Floor Area	4783 sq. ft.	4783 sq. ft.
Number of Beds	29	26

Description of Existing Ward: See Part Three, paragraph 9 of this report

COST ESTIMATE

	Total £	*per Bed* £ s. d.	*per sq. ft.* s. d.
Preliminaries (10%)	895	34 8 5½	3 9
Contingencies (2½%)	246	9 9 2¾	1 0¼
Structural Elements			
Demolition of partitions and stripping out for structural and service trades	162		
Building up of existing and slapping of new openings in internal partitions	110		
Making good timber flooring at alterations	225	40 18 5½	4 5½
Lightweight Block partitions	247		
Internal Doors	320		
Flush solid core to all new openings (£25 per leaf)			
Half glazed to single and two bed rooms (£30 per leaf)			
TOTAL STRUCTURAL ELEMENTS —£1064			
Finishes			
Wall Finishes	399	15 6 11¼	1 8
½″ plaster to new partitions. Plaster repairs at alterations			
Floor Finishes	707	27 3 10¼	2 11½
Vinyl floor sheeting and underlay on existing timber flooring (27/- per sq. yd.)			
Ceiling Finishes	549	21 2 3¾	2 3½
Repairs (almost 50% of area)			
Internal Decoration	400	15 7 8	1 8
Simple decoration throughout			
TOTAL FINISHES—£2055			
per Bed —£79 0 9¼			
per sq. ft.— 8 7			
Fittings and Built-in Furniture			
Storage and Worktop Cupboards in:			
Kitchen (£100)			
Preparation (including Drugs Cupboard and C.S.S.D. Dispenser) (£150)			
Disposal and Sluice (including a Ventilated Cupboard) (£245)			
Nurses Station Desk and Cupboard (£100)			
Sundry Shelving and Ironmongery, Mirrors, Splashbacks, etc. in Doctor, Sister, Staff, Domestic Service and Equipment Rooms and Toilets (£120)			
Bed Curtain Rails (£310)			
Seat and Curtain Rail at Shower (£5)			
No provision for Patients' Lockers			
TOTAL FITTINGS AND BUILT-IN FURNITURE	1030	39 12 4	4 3¾

	Total £	*per Bed* £ s. d.	*per sq. ft.* s. d.
Services			
External Plumber Minimum alterations and connections to existing soil and waste stacks	100	3 16 11	0 5
Sanitary Fittings and Wastes 5—W.H.B.s (£12 each) 4—Hand Rinse Basins (£10 each) 4—W.C.s (£15 each) 1—Bath (£50) 3—Stainless steel sinks (£45 each) 1—Shower fitting (£50) 1—Slop sink (£25) 1—Bed pan destructor (£300)	1120	43 1 $6\frac{1}{4}$	4 $8\frac{1}{2}$
Hot and Cold Water Supplies and Overflows (£35 per fitting; no allowance for new mains cisterns or cylinders)	770	29 12 $3\frac{3}{4}$	3 $2\frac{3}{4}$
Heating Services Minimum adaptation of existing heating pipes with 7 new radiators (£30 each)	300	11 10 $9\frac{1}{4}$	1 3
Electrical Services Total renewal including sub-mains gear 40—Lighting points (£5 each) 40—Power points (£6 each) 26—Bedhead units (£30 each) 2—Clocks (£8 each) Fire Alarm System (£40) Luminous Call (£200) 26—Shaver points (£4 each) T.V. Aerial (£10) Emergency Lighting (£40) Mobile X-Ray point (£20)	2100	80 15 $4\frac{3}{4}$	8 $9\frac{1}{2}$
Kitchen and other Equipment NOTE: A central dishwashing service will be available 1—Cooker (£80) 1—Refrigerator (£75) 1—Water Boiler (£60) 2—Hosereels (£50 each)	315	12 2 $3\frac{3}{4}$	1 $3\frac{3}{4}$
Builders' Work in connection with Services	100	3 16 11	0 5
TOTAL SERVICES—£4805 per Bed —£184 16 $1\frac{3}{4}$ per sq. ft.— 20 $1\frac{1}{2}$			
TOTAL UPGRADING WARD B1	£10095	£388 5 $4\frac{3}{4}$	42 3

TABLE 3 (B) UPGRADING continued

WARD B2

	Before Upgrading	*After Upgrading*
Floor Area	4783 sq. ft.	4783 sq. ft.
Number of Beds	29	25

Description of Existing Ward: See Part Three, paragraph 9 of this report

COST ESTIMATE

	Total £	*per Bed* £ s. d.	*per sq. ft.* s. d.
Preliminaries (10%)	1153	46 2 $4\frac{1}{2}$	4 10
Contingencies ($2\frac{1}{2}$%)	316	12 12 $9\frac{1}{2}$	1 4
Structural Elements			
Demolition and Stripping out	180		
Building up and Slapping at partitions	90		
Making good timber flooring at alterations	220		
Lightweight block partitions	305	67 5 $7\frac{1}{2}$	7 $0\frac{1}{2}$
Timber framed asbestolux, covered partitions between two bed bays (180/- per sq. yd.)	525		
Internal Doors as Ward B1	362		
TOTAL STRUCTURAL ELEMENTS —£1682			
Finishes			
Wall Finishes $\frac{1}{2}$" plaster to new partitions and repairs	408	16 6 $4\frac{3}{4}$	1 $8\frac{1}{2}$
Floor Finishes Vinyl sheeting and underlay as Ward B1 (27/- per sq. yd.)	706	28 4 $9\frac{3}{4}$	2 $11\frac{1}{4}$
Ceiling Finishes Repairs as Ward B1	565	22 12 0	2 $4\frac{1}{2}$
Internal Decoration Simple Decoration throughout	450	18 0 0	1 $10\frac{3}{4}$
TOTAL FINISHES—£2129 per Bed —£85 3 $2\frac{1}{2}$ per sq. ft.— 8 11			
Fittings and Built-in Furniture			
Storage and Worktop Cupboards in: Kitchen, Preparation, Disposal and Sluice; Nurses Station Desk and Cupboard as Ward B1 (£595)			
Sundry Shelving and Ironmongery, Mirrors, Splashbacks as Ward B1 (£130)			
Bed Curtain Rails (£240)			
Seat and Curtain Rails at Showers (£10)			
Patients' Wardrobes (£40 each)			
TOTAL FITTINGS AND BUILT-IN FURNITURE	1975	79 0 0	8 3
Services			
External Plumber Minimum alterations and connections as Ward B1	150	6 0 0	0 $7\frac{1}{2}$

	Total £	*per Bed* £ s. d.	*per sq. ft.* s. d.
Sanitary Fittings and Wastes (new throughout) As Ward B1 with 7 additional W.H.B.s in toilets and main ward areas and 1 additional shower compartment	1390	55 12 0	5 10
Hot and Cold Water Supplies and Overflows £35 per fitting as Ward B1	1015	40 12 0	4 3
Heating Services Minimum adaptation of existing heating pipes with 8 new radiators (£30 each)	350	14 0 0	1 5¾
Electrical Services As Ward B1 with additional lighting and power points One additional mobile X-Ray point. One less shaver and bed head unit	2175	87 0 0	9 1
Medical Gases Local Oxygen supply installation with copper pipework and concealed wall outlet to intensive care area only (3 outlets in total)	200	8 0 0	0 10
Kitchen and other Equipment As Ward B1	315	12 12 0	1 3¾
Builders' Work in connection with Services	150	6 0 0	0 7½
TOTAL SERVICES—£5745 per Bed —£229 16 0 per sq. ft.— 24 0½			
TOTAL UPGRADING WARD B2	£13000	£520 0 0	54 5

TABLE 3 (B) UPGRADING continued

WARD B3

	Before Upgrading	*After Upgrading*
Floor Area	4783 sq. ft.	4783 sq. ft.
Number of Beds	29	20

Description of Existing Ward: See Part Three, paragraph 9 of this report

COST ESTIMATE

	Total £	*per Bed* £ s. d.	*per sq. ft.* s. d.
Preliminaries (10%)	1501	75 1 0	6 $3\frac{1}{4}$
Contingencies ($2\frac{1}{2}$%)	413	20 13 0	1 $8\frac{3}{4}$
Structural Elements			
Demolition and Stripping out as Ward B1 including removal of existing doors and Heating Installation	288		
Building up and Slapping as Ward B1	80		
Making good timber flooring as Ward B1	253		
Lightweight block partitions	558		
Timber framed partitions covered with plasterboard and plaster (58/6 per sq. yd.)	483	112 12 0	9 5
Internal Doors	590		
Flush solid core doors throughout (£25 per leaf)			
Half glazed to single bed rooms (£30 per leaf)			
Sliding door with glazed panel to 4 bed rooms (£35 each)			
TOTAL STRUCTURAL ELEMENTS —£2252			
Finishes			
Wall Finishes	749	37 9 0	3 $1\frac{1}{2}$
$\frac{1}{2}''$ plaster to new partitions and repairs			
Floor Finishes	703	35 3 0	2 $11\frac{1}{4}$
Vinyl sheeting and underlay as Ward B1 (27/- per sq. yd.)			
Ceiling Finishes	581	29 1 0	2 $5\frac{1}{4}$
Repairs as Ward B1			
Internal Decoration	550	27 10 0	2 $3\frac{3}{4}$
Simple decoration throughout			
TOTAL FINISHES—£2583			
per Bed —£129 3 0			
per sq. ft.— 10 $9\frac{3}{4}$			
Fittings and Built-in Furniture			
Storage and Worktop Cupboards in: Kitchen (£100)			
Preparation (including Drug Cupboard and C.S.S.D. Dispenser) (£150)			
Disposal and Sluice (including Ventilated Cupboard (£250)			
Nurses Station Desk and Cupboard (£100)			
Sundry Shelving and Ironmongery, Mirrors and Splashbacks (£150)			
Bed Curtain Rails (£225)			
Seats and Curtain Rails at Showers (£10)			
Patients' Wardrobes (£40 each)			
TOTAL FITTINGS AND BUILT-IN FURNITURE	1785	89 5 0	7 $5\frac{3}{4}$

	Total £	*per Bed* £ s. d.	*per sq. ft.* s. d.
Services			
External Plumber Alterations to existing Stacks; new stacks and connections	500	25 0 0	2 1¼
Sanitary Fittings and Wastes Same number and standard of fitting as Ward B2 with different layout	1519	75 19 0	6 4¼
Hot and Cold Water Supplies and Overflows £45 per fitting including rearrangement of storage	1305	65 5 0	5 5½
Heating Services Complete renewal of all flow and return pipes and provision of 30 radiators (£30 each) No allowance for new boilers or calorifiers	2400	120 0 0	10 0¼
Electrical Services As Ward B1 with additional lighting and power points One additional mobile X-Ray point. Six fewer shaver and bedhead units	2000	100 0 0	8 4¼
Medical Gases Local Oxygen Supply as Ward B2 to intensive care area only (3 outlets)	200	10 0 0	0 10
Kitchen and other Equipment As Ward B1	315	15 15 0	1 3¾
Builders' Work in connection with Services	150	7 10 0	0 7¼
TOTAL SERVICES—£8389 per Bed —£419 9 0 per sq. ft.— 35 0½			
TOTAL UPGRADING WARD B3	£16923	£846 3 0	70 9

Part Five: STATISTICS

15 SURVEY 1964

15.1 In 1964, the Scottish Home and Health Department carried out a survey on modernisation of existing wards in Scotland. This survey showed that between the years 1959 and 1964, 302 ward units were modernised or upgraded and some 62 other wards had schemes in progress. There were a further 724 ward units shown as built before 1948 that had not been upgraded and would not be replaced by new building by 1969.

16 SURVEY 1966

16.1 The Scottish Hospital Centre undertook a more detailed survey in March 1966 to bring the 1964 survey figures up-to-date, to classify ward units into types of wards, and to show the category of upgrading of the wards that had taken place between April 1959 and March 1966. The survey covered all ward units built before 1948 but excluded any ward unit which would be replaced by new building planned to start before 1st April 1971. For this survey a ward unit was defined as one nursing charge.

16.2 An upgraded unit was defined (as in the earlier S.H.H.D. survey) as one in which improvements or alterations had cost more than £50 per bed for an individual scheme, with or without architectural drawings. This cost should have excluded routine maintenance, replacements and redecoration.

16.3 For this survey a questionnaire was sent to all the hospital boards asking for details of the structural types of ward units, the number of ward units upgraded between 1948 and 31st March 1959, and between 1st April 1959 and 31st March 1966. In addition those ward units upgraded between April 1959 and March 1966 were also shown under a category of upgrading.

16.4 Ward units were shown under the following types:

A. Emergency Medical Service wards (built about 1941)
B. Nightingale Ward with sanitary " turrets "
C. Nightingale Ward with grouped sanitary and other ancillary rooms
D. Pavilion type isolation units
E. Any other type of ward unit constituting a nursing charge

16.5 The extent of the upgrading was shown under the following categories:

A. Improvement of bed areas by provision of cubicle curtains, new floor covering, new light fittings and repainting
B. Increased sanitary arrangements
C. Improved and re-arranged nursing ancillary rooms
D. Substantial structural alterations to bed areas and/or ancillary rooms

17 SIGNIFICANT STATISTICS

17.1 The tables which follow give the 1966 survey figures for all hospitals in Scotland. Table 1 is a summary for Scotland and each hospital region, showing the number of ward units, with the number of beds within these ward units, in both somatic and psychiatric hospitals. The total number of ward units and beds shown refers to those wards built before 1948 and does not include any new building since that date. It is only fair to point out that the totals for ward units not upgraded will include some ward units where improvements or alterations have been carried out but the cost per bed will have been less than £50 for an individual scheme. This particularly applies to some psychiatric hospitals where ward units or nursing charges comprise upwards of 70 beds. These alterations or improvements will, in the main, have been to a minimal standard although greatly improving the amenity to the patient and the appearance of the ward. This table shows that between 1948 and 31st March 1959, 252 ward units were upgraded and between 1st April 1959 and 31st March 1966, 721 wards were upgraded, leaving 987 ward units not upgraded out of a total of 1960 ward units. The ward units not upgraded comprise 655 ward units in somatic hospitals and 322 in psychiatric hospitals. In somatic hospitals approximately 720 ward units, containing 17,500 beds, have been upgraded to varying standards. Some 250 wards, containing 10,300 beds, in psychiatric hospitals have also

been upgraded to varying standards. The figures for the different regions seem to compare quite closely and it would appear that all regions have given similar priority to somatic and psychiatric hospitals. There are obviously differences in the size of the problem faced by the individual regional boards and boards of management to carry out a programme of modernisation.

17.2 Tables 2A and 2B show a breakdown of somatic and psychiatric hospitals by region giving types of ward units and the numbers of ward units that have been upgraded. It might have been thought that types A (E.M.S.) and D (Pavilion) being largely single storeyed buildings and therefore easier in many ways to extend and modify would have encouraged the hospital authorities to direct their attention and money towards them. Perhaps because of the limited anticipated life of these units alterations and improvements have been spread over all types of ward units regardless of their difficulties. Types B and C (Nightingale Wards), particularly in the multi-storeyed hospitals, present many difficulties in upgrading and yet 340 ward units have been altered: 145 admittedly to a minimal standard.

17.3 From Tables 3 and 4 it can be seen that 294 ward units were upgraded during the period 1959-1966 in the categories A, B and AB (*i.e.* to a relatively modest level). The actual figures for ward units upgraded between 1948 and March 1959 are not available but if a similar proportion is allowed for these then approximately a further 112 should be included in these categories. Thus 406 ward units out of a total of 973 upgraded between 1948 and 1966 come into this category of minimum improvement and might almost be classed as not upgraded. This in turn would imply that 1393 ward units out of a total of 1960 require to be upgraded to meet present day needs.

TABLE 1

WARD UPGRADING STATISTICS — SUMMARY

Ward Units built before 1948

REGION		UPGRADED 1948-March 1959		UPGRADED April 1959-March 1966		NOT UPGRADED		TOTAL	
		ward units	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*
NORTH	SOMATIC	10	206	14	354	38	896	62	1456
	PSYCHIATRIC	1	32	13	609	20	472	34	1113
	TOTAL	11	238	27	963	58	1368	96	2569
NORTH EASTERN	SOMATIC	5	85	30	829	91	2323	126	3237
	PSYCHIATRIC	16	606	21	701	23	865	60	2172
	TOTAL	21	691	51	1530	114	3188	186	5409
EASTERN	SOMATIC	5	135	49	1204	94	2445	148	3784
	PSYCHIATRIC	15	592	27	1039	11	473	53	2104
	TOTAL	20	727	76	2243	105	2918	201	5888
SOUTH EASTERN	SOMATIC	36	912	132	3591	118	2855	286	7358
	PSYCHIATRIC	12	621	41	1299	63	2779	116	4699
	TOTAL	48	1533	173	4890	181	5634	402	12057
WESTERN	SOMATIC	135	3095	299	7113	314	7561	748	17769
	PSYCHIATRIC	17	666	95	4221	215	9613	327	14500
	TOTAL	152	3761	394	11334	529	17174	1075	32269
SCOTLAND	SOMATIC	191	4433	524	13091	655	16080	1370	33604
	PSYCHIATRIC	61	2517	197	7869	332	14202	590	24588
	TOTAL	252	6950	721	20960	987	30282	1960	58192

TABLE 2

TYPES OF WARD UNITS

(a) Somatic Hospitals

	REGION	A. E.M.S.		B. Nightingale (Turrets)		C. Nightingale (Grouped Anc.)		D. Pavilion		E. Others		All Types	
		ward units	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*
NORTHERN	UPGRADED 1948-March 1959	3	89							7	117	10	206
	April 1959-March 1966					8	269	2	20	4	65	14	354
	NOT UPGRADED	11	327			2	60			25	509	38	896
	TOTAL	14	416			10	329	2	20	36	691	62	1456
NORTH EASTERN	UPGRADED 1948-March 1959							1	43	4	42	5	85
	April 1959-March 1966					7	237	7	227	16	365	30	829
	NOT UPGRADED	2	82			29	1014	3	55	57	1172	91	2323
	TOTAL	2	82			36	1251	11	325	77	1579	126	3237
EASTERN	UPGRADED 1948-March 1959	1	24			2	52			2	59	5	135
	April 1959-March 1966	19	384	11	231	18	531			1	58	49	1204
	NOT UPGRADED	36	996	14	401	20	545	2	32	22	471	94	2445
	TOTAL	56	1404	25	632	40	1128	2	32	25	588	148	3784
SOUTH EASTERN	UPGRADED 1948-March 1959	5	143	11	235	7	185	2	50	11	299	36	912
	April 1959-March 1966	26	601	33	785	25	707	10	375	38	1123	132	3591
	NOT UPGRADED	9	242	19	484	23	527	22	546	45	1056	118	2855
	TOTAL	40	986	63	1504	55	1419	34	971	94	2478	286	7358
WESTERN	UPGRADED 1948-March 1959	25	683	35	944	43	709	20	427	12	332	135	3095
	April 1959-March 1966	26	693	77	1948	63	1365	86	2036	47	1071	299	7113
	NOT UPGRADED	67	1496	40	1233	25	767	120	2315	72	1750	314	7561
	TOTAL	108	2872	152	4125	131	2841	226	4778	131	3153	748	17769
SCOTLAND	UPGRADED 1948-March 1959	34	939	46	1179	52	946	23	520	36	849	191	4433
	April 1959-March 1966	71	1678	121	2964	121	3109	105	2658	106	2682	524	13091
	NOT UPGRADED	125	3143	73	2118	99	2913	147	2948	221	4958	655	16080
	TOTAL	220	5760	240	6261	272	6968	275	6126	363	8489	1370	33604

TABLE 2

TYPES OF WARD UNITS

(b) Psychiatric Hospitals

	REGION	A. E.M.S.		B. Nightingale (Turrets)		C. Nightingale (Grouped Anc.)		D. Pavilion		E. Others		All Types	
		ward units	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*
NORTHERN	UPGRADED 1948-March 1959									1	32	1	32
	April 1959-March 1966					12	549			1	60	13	609
	NOT UPGRADED					13	351	5	105	2	16	20	472
	TOTAL					25	900	5	105	4	108	34	1113
NORTH EASTERN	UPGRADED 1948-March 1959			1	28	10	458			5	120	16	606
	April 1959-March 1966			3	94	15	503	1	16	2	88	21	701
	NOT UPGRADED			1	66	15	624	1	17	6	158	23	865
	TOTAL			5	188	40	1585	2	33	13	366	60	2172
EASTERN	UPGRADED 1948-March 1959					7	151			8	441	15	592
	April 1959-March 1966					26	997	1	42			27	1039
	NOT UPGRADED					9	405			2	68	11	473
	TOTAL					42	1553	1	42	10	509	53	2104
SOUTH EASTERN	UPGRADED 1948-March 1959					4	157			8	464	12	621
	April 1959-March 1966					6	191	7	155	28	953	41	1299
	NOT UPGRADED					28	1300	6	130	29	1349	63	2779
	TOTAL					38	1648	13	285	65	2766	116	4699
WESTERN	UPGRADED 1948-March 1959			2	157	14	484	1	25			17	666
	April 1959-March 1966			3	139	82	3661			10	421	95	4221
	NOT UPGRADED	22	703			126	5222			67	3688	215	9613
	TOTAL	22	703	5	296	222	6367	1	25	77	4109	327	14500
SCOTLAND	UPGRADED 1948-March 1959			3	185	35	1250	1	25	22	1057	61	2517
	April 1959-March 1966			6	233	141	5901	9	213	41	1522	197	7869
	NOT UPGRADED	22	703	1	66	191	7902	12	252	106	5279	332	14202
	TOTAL	22	703	10	484	367	15053	22	490	169	7858	590	24588

TABLE 3

UPGRADED WARD UNITS APRIL 1959 — MARCH 1966

(By types of ward and categories of upgrading)

SCOTLAND

Somatic Hospitals

Category of Upgrading (see paragraph 16.5)	A. E.M.S.		B. Nightingale (Turrets)		C. Nightingale (Grouped Anc.)		D. Pavilion		E. Others		All Types	
	ward units	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*
A.	10	235	14	295	40	859	19	490	23	527	106	2406
B.	7	200	6	262	5	148	3	94	7	233	28	937
C.												
D.	2	48	3	81	13	241	17	396	13	373	48	1139
AB.	17	351	17	483	9	231	11	314	18	494	72	1873
AC.	2	64	7	175	8	241	1	16	3	59	21	553
AD.	3	57					1	29	3	65	7	151
ABC.	8	171	21	500	15	522	37	880	15	397	96	2470
ABD.	2	30			4	122	3	60	1	13	10	225
ACD.	1	20									1	20
ABCD.	19	502	50	1113	22	563	10	232	20	453	121	2863
BC.			3	55	1	22			1	36	5	113
BD.					4	160	3	147	2	34	9	341
BCD.												
CD.												
No. UPGRADED UNITS	71	1678	121	2964	121	3109	105	2658	106	2682	524	13091

TABLE 3a

NORTHERN HOSPITAL REGION

Somatic Hospitals

CATEGORY OF UPGRADING (see paragraph 16.5)	A. E.M.S.		B. Nightingale (Turrets)		C. Nightingale (Grouped Anc.)		D. Pavilion		E. Others		All Types	
	ward units	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*
A.					2	61			4	65	6	126
B.												
C.												
D.												
AB.					3	97	2	20			5	117
AC.												
AD.												
ABC.					1	31					1	31
ABD.												
ACD.												
ABCD					2	80					2	80
BC.												
BD.												
BCD												
CD												
No. UPGRADED UNITS					8	269	2	20	4	65	14	354

TABLE 3b

NORTH EASTERN HOSPITAL REGION

Somatic Hospitals

Category of Upgrading (see paragraph 16.5)	A. E.M.S.		B. Nightingale (Turrets)		C. Nightingale (Grouped Anc.)		D. Pavilion		E. Others		All Types	
	ward units	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*
A.							2	64			2	64
B.					3	77	2	63			5	140
C.												
D.									1	46	1	46
AB.							3	100	1	28	4	128
AC.									1	24	1	24
AD.									1	24	1	24
ABC.									3	51	3	51
ABD.												
ACD.												
ABCD.									9	192	9	192
BC.												
BD.					4	160					4	160
BCD.												
CD.												
No. UPGRADED UNITS					7	237	7	227	16	365	30	829

TABLE 3c

EASTERN HOSPITAL REGION

Somatic Hospitals

Category of Upgrading (see paragraph 16.5)	A. E.M.S.		B. Nightingale (Turrets)		C. Nightingale (Grouped Anc.)		D. Pavilion		E. Others		All Types	
	ward units	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*
A.	3	57	6	135	11	315			1	58	21	565
B.	1	16									1	16
C.												
D.	1	20									1	20
AB.	5	112	2	30							7	142
AC.					7	216					7	216
AD.	3	57									3	57
ABC.			3	66							3	66
ABD.												
ACD.	1	20									1	20
ABCD.	5	102									5	102
BC.												
BD.												
BCD.												
CD.												
No. UPGRADED UNITS	19	384	11	231	18	531			1	58	49	1204

TABLE 3d

SOUTH EASTERN HOSPITAL REGION

Somatic Hospitals

CATEGORY OF UPGRADING (see paragraph 16.5)	A. E.M.S.		B. Nightingale (Turrets)		C. Nightingale (Grouped Anc.)		D. Pavilion		E. Others		All Types	
	ward units	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*
A.	4	100	1	20	5	74			6	119	16	313
B.	6	184	1	37					2	85	9	306
C.												
D.					1	20			6	210	7	230
AB.	12	239	1	26	1	20	4	129	11	376	29	796
AC.			1	28	1	25			2	33	4	86
AD.									1	11	1	11
ABC.	2	48	11	278	9	340	1	43	6	187	29	896
ABD.	2	30									2	30
ACD.												
ABCD.			15	341	7	206	2	56	1	32	25	635
BC.			3	55	1	22			1	36	5	113
BD.							3	147	2	34	5	181
BCD.												
CD.												
No. UPGRADED UNITS	26	601	33	785	25	707	10	375	38	1123	132	3591

TABLE 3e

WESTERN HOSPITAL REGION

Somatic Hospitals

CATEGORY OF UPGRADING (see paragraph 16.5)	A. E.M.S.		B. Nightingale (Turrets)		C. Nightingale (Grouped Anc.)		D. Pavilion		E. Others		All Types	
	ward units	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*
A.	3	78	7	140	22	409	17	426	12	285	61	1338
B.			5	225	2	71	1	31	5	148	13	475
C.												
D.	1	28	3	81	12	221	17	396	6	117	39	843
AB.			14	427	5	114	2	65	6	90	27	696
AC.	2	64	6	147			1	16			9	227
AD.							1	29	1	30	2	59
ABC.	6	123	7	156	5	151	36	837	6	159	60	1426
ABD.					4	122	3	60	1	13	8	195
ACD.												
ABCD.	14	400	35	772	13	277	8	176	10	229	80	1854
BC.												
BD.												
BCD.												
CD.												
No. UPGRADED UNITS	26	693	77	1948	63	1365	86	2036	47	1071	299	7113

TABLE 4

UPGRADED WARD UNITS APRIL 1959 — MARCH 1966

(By types of ward and categories of upgrading)

SCOTLAND

Psychiatric Hospitals

CATEGORY OF UPGRADING (see paragraph 16.5)	A. E.M.S.		B. Nightingale (Turrets)		C. Nightingale (Grouped Anc.)		D. Pavilion		E. Others		All Types	
	ward units	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*
A.					33	1179	2	60	4	193	39	1432
B.			3	139	18	748	1	23	1	60	23	970
C.												
D.			1	18	20	606	1	16	4	249	26	889
AB.					18	750			8	194	26	944
AC.					11	504					11	504
AD.									11	455	11	455
ABC.					13	957	1	42	4	126	18	1125
ABD.					14	539					14	539
ACD.												
ABCD.					9	370	4	72	9	245	22	687
BC.			1	42							1	42
BD.					5	248					5	248
BCD.			1	34							1	34
CD.												
No. UPGRADED UNITS			6	233	141	5901	9	213	41	1522	197	7869

TABLE 4a

NORTHERN HOSPITAL REGION

Psychiatric Hospitals

CATEGORY OF UPGRADING (see paragraph 16.5)	A. E.M.S.		B. Nightingale (Turrets)		C. Nightingale (Grouped Anc.)		D. Pavilion		E. Others		All Types	
	ward units	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*
A.												
B.					9	466			1	60	10	526
C.												
D.												
AB.												
AC.												
AD.												
ABC.												
ABD.												
ACD.												
ABCD.												
BC.												
BD.					3	83					3	83
BCD.												
CD.												
No. UPGRADED UNITS					12	549			1	60	13	609

TABLE 4b

NORTH EASTERN HOSPITAL REGION

Psychiatric Hospitals

CATEGORY OF UPGRADING (see paragraph 16.5)	A. E.M.S.		B. Nightingale (Turrets)		C. Nightingale (Grouped Anc.)		D. Pavilion		E. Others		All Types	
	ward units	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*
A.					3	128					3	128
B.					4	150					4	150
C.												
D.			1	18	4	123	1	16	1	58	7	215
AB.												
AC.					4	102					4	102
AD.												
ABC.									1	30	1	30
ABD.												
ACD.												
ABCD.												
BC.			1	42							1	42
BD.												
BCD.			1	34							1	34
CD.												
No. UPGRADED UNITS			3	94	15	503	1	16	2	88	21	701

TABLE 4c

EASTERN HOSPITAL REGION

Psychiatric Hospitals

Category of Upgrading (see paragraph 16.5)	A. E.M.S.		B. Nightingale (Turrets)		C. Nightingale (Grouped Anc.)		D. Pavilion		E. Others		All Types	
	ward units	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*
A.												
B.					3	69					3	69
C.												
D.					2	40					2	40
AB.					2	90					2	90
AC.												
AD.												
ABC.					3	226	1	42			5	268
ABD.					10	348					10	348
ACD.												
ABCD.					6	224					6	224
BC.												
BD.												
BCD.												
CD.												
No. UPGRADED UNITS					26	997	1	42			27	1039

TABLE 4d

SOUTH EASTERN HOSPITAL REGION

Psychiatric Hospitals

CATEGORY OF UPGRADING (see paragraph 16.5)	A. E.M.S.		B. Nightingale (Turrets)		C. Nightingale (Grouped Anc.)		D. Pavilion		E. Others		All Types	
	ward units	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*
A.							2	60	4	193	6	253
B.							1	23			1	23
C.												
D.					6	191					6	191
AB.									8	194	8	194
AC.												
AD.									11	455	11	455
ABC.									1	30	1	30
ABD.												
ACD.												
ABCD.							4	72	4	81	8	153
BC.												
BD.												
BCD.												
CD.												
No. UPGRADED UNITS					6	191	7	155	28	953	41	1299

TABLE 4e

WESTERN HOSPITAL REGION

Psychiatric Hospitals

CATEGORY OF UPGRADING (see paragraph 16.5)	A. E.M.S.		B. Nightingale (Turrets)		C. Nightingale (Grouped Anc.)		D. Pavilion		E. Others		All Types	
	ward units	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*	*ward units*	*beds*
A.					30	1051					30	1051
B.			3	139	2	63					5	202
C.												
D.					8	252			3	191	11	443
AB.					16	660					16	660
AC.					7	402					7	402
AD.												
ABC.					10	731			2	66	12	797
ABD.					4	191					4	191
ACD.												
ABCD.					3	146			5	164	8	310
BC.												
BD.					2	165					2	165
BCD.												
CD.												
No. UPGRADED UNITS			3	139	82	3661			10	421	95	4221

APPENDICES

APPENDIX I

BASIC REQUIREMENTS
(Reproduced from paragraph 3 of Part One)

PATIENT	1	An environment which will provide an acceptable level of comfort, privacy and amenity.
	2	Facilities for their human needs.
	3	Facilities for the diagnosis and treatment of their condition.
	4	The reassurance of visual contact with nursing and medical staff, and an efficient nurse call system.
NURSE	1	Observation of patients, commensurate with their condition.
	2	Facilities for the giving and receiving of reports and instructions and maintaining records.
	3	Storage for items of equipment. Facilities for the preparation and carrying out of nursing activities and for the disposal of items used in patient care.
	4	Cloakroom facilities.
DOCTOR	1	An environment which will provide for history-taking, examination, diagnosis and treatment of patients.
	2	The right equipment in the right place at the right time.
	3	Writing and discussion facilities and access to patients' records.

APPENDIX 2

FACTORS TO BE CONSIDERED
(Summary of Paragraphs 5.3 to 5.5 of Part Two)

PATIENT	1	Single rooms; 4-bed rooms; bed centres 8ft-7ft; day space.
	2	W.C. and washing facilities adjacent to ambulant bed area. (Enclosed compartments; outward opening doors; admit wheelchairs.) Free standing bath. Shower (wet and dry compartment). Clothing storage.
	3	Grouping of ill patients. Provision of treatment rooms.
	4	Glazing on corridor walls. Nurse call system.
NURSE	1	Grouping of ill patients; observation.
	2	Nurses' station related to ill patient care.
	3	Grouping of nurses' station, preparation areas and disposal areas, related to bed areas which they serve.
	4	Staff cloakroom.
DOCTOR	1	Single rooms; treatment room; interview room.
	2	Reliable supply and disposal arrangements.
	3	Doctors' office/discussion room adjacent to nurses' station, sharing records.

APPENDIX 3

RECOMMENDED PRINCIPLES

(Reproduced from paragraph 6.2 of Part Two)

First

The grouping of the most ill patients to facilitate observation by nurses who have ready access to nurse working areas. The resources of the ward can then be concentrated on those who most need them.

Second

The concentration of supply and disposal facilities in two adjacent areas. (In some cases this can be more a matter of re-organisation than re-planning, but the important thing is to have these two areas conveniently located for the nurses treating the ill patients.)

Third

The improvement of the level of privacy for the patient. (This involves partitioning, curtaining and the removal of noisy activities by the provision of a day room. The bed area is necessarily for some patients the location of treatment, bathroom and lavatory functions which need privacy.)

Fourth

The provision of acceptable w.c. and washing facilities for both ambulant and wheelchair patients.

APPENDIX 4

C. / **C'd.** ... CUPBOARD

Con. ... CONSULTANT'S ROOM

D. ... DUTY ROOM

Disp. ... DISPOSAL ROOM

Dr. ... DOCTOR'S ROOM

D.R. ... DAY ROOM

D.S.R. ... DOMESTIC SERVICE ROOM

E. / **Equ.** ... EQUIPMENT STORE

fl. ... FLOWER ROOM

I. ... INCINERATOR

K. ... KITCHEN

L. ... LINEN STORE

Lab. ... LABORATORY & TEST ROOM

N.S. ... NURSES' STATION

O.P. ... OUT PATIENTS' WAITING ROOM

P.C. ... PATIENTS' CLOTHES LOCKERS

Prep. ... PREPARATION ROOM

Rec. ... RECEPTIONIST

S. ... SISTER'S ROOM

Sec. ... SECRETARY

Sl ... SLUICE

St. ... STORE

Staff. ... STAFF TOILETS

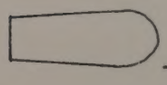
T. ... TREATMENT ROOM

t. ... TROLLEY

tx. ... TELEPHONE

V. ... VERANDAH

W. ... WAITING AREA FOR VISITORS

 ... BATH

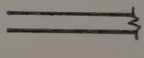
... SHOWER

... W. C.

... HAND RINSE BASIN

... WASH HAND BASIN

... SOLID PARTITION

 ... HALF GLAZED PARTITION

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